

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

**DECLARATION OF ACCURACY OF TRANSLATION
IN LIEU OF SWORN TRANSLATION (37 C.F.R. § 1.68)**

The undersigned translator, Masao Mitsuyoshi, serving in a firm of Kyoritsu International (Tokyo Office) located in c/o Chanokiya Bldg., No. 3-1, Nihonbashi-Honcho 2-chome, Chuo-ku, Tokyo 103-0023, Japan, hereby certifies and declares that:

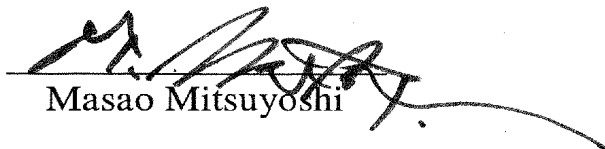
(1) I am fully conversant with both the Japanese language and the English language;

(2) I have translated the Japanese-language specification of the Japanese patent application, entitled "IMAGE PROCESSING APPARATUS AND DATA PROCESSING APPARATUS" filed on November 8, 2002 in the Japanese Patent Office under the Filing No. 2002-324781 (324781/2002), into English, the Japanese-language specification being filed as a certified priority document in the United States Patent and Trademark Office together with the United States patent application entitled "IMAGE PROCESSING APPARATUS AND DATA PROCESSING APPARATUS" and filed on October 30, 2003 under Serial No. 10/699,279. A copy of the English translation is attached hereto; and

(3) The attached English translation is, to the best of my knowledge, and belief, an accurate and literal translation from the Japanese language into the English language.

The undersigned, Masao Mitsuyoshi, hereby declares further that all statements herein of my own knowledge are true; and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001 and that such willful false statements may jeopardize the validity of the matter with which this translation is used.

On this 9th day of March, 2007


Masao Mitsuyoshi

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[TITLE OF INVENTION] IMAGE PROCESSING APPARATUS AND DATA
PROCESSING APPARATUS

[SCOPE OF CLAIM FOR PATENT]

5 [CLAIM 1]

An image processing apparatus, which includes a storage unit for storing data to control the operation of the image processing apparatus in such a manner of being capable of updating the data, characterized by comprising:

10 a communication unit for receiving an electronic mail, which includes an instruction to acquire an data for use in updating so as to execute an update of the data; and

control means for acquiring the data for use in updating in accordance with the instruction included in the electronic mail so as to control the update of the data stored in the storage unit.

[CLAIM 2]

The image processing apparatus set forth in claim 1, characterized in that:

20 the communication unit can receive update instructing information, which includes an instruction to acquire the data for use in updating so as to execute the update of the data by making use of ftp (file transfer protocol) or http (hyper-text transfer protocol); and

25 the control means can control the update of the data stored in the storage unit by acquiring the data for use in updating in accordance with the instruction included in the update instructing information.

[CLAIM 3]

30 The image processing apparatus set forth in claim 1 or 2, characterized in that:

the storage unit can store information concerning an acquisition method for acquiring the data for use in updating from a server connected thereto through a computer network; and

35 the control means can allow itself to execute such a control as acquiring the data for use in updating through the communication unit from the server connected through the computer network on the basis of the information concerning the acquisition method for acquiring the data for use in updating stored in the storage unit.

[CLAIM 4]

The image processing apparatus set forth in claim 3, characterized in that:

45 the communication unit can receive the information concerning the acquisition method for acquiring the data for use in updating; and

the control means can execute such a control as storing the information concerning the acquisition method for acquiring the data for use in updating in the storage unit,

50

and thereby setting up the acquisition method for acquiring the data for use in updating.

[CLAIM 5]

5 The image processing apparatus set forth in claim 3 or 4, characterized in that the acquisition method for acquiring the data for use in updating can acquire the data for use in updating from the server by making use of either one of the ftp, http and an electronic mail.

[CLAIM 6]

10 The image processing apparatus set forth in claim 4, characterized in that the communication unit can receive the information concerning the acquisition method for acquiring the data for use in updating by making use of either one of the ftp, http and an electronic mail.

15 [CLAIM 7]

The image processing apparatus set forth in claim 3, characterized by further comprising an input unit for inputting the information concerning the acquisition method for acquiring the data for use in updating,

20 wherein the control means can allow itself to execute such a control as storing the information concerning the acquisition method for acquiring the data for use in updating in the storage unit, and a further control as setting up the acquisition method for acquiring the data for use in updating.

25 [CLAIM 8]

The image processing apparatus set forth in either one of claims 1 to 7, characterized in that data for use in updating comprises at least one or more of firmware for controlling the operation of the image processing apparatus, and set-up data to set up functions of the image processing apparatus.

30 [CLAIM 9]

The image processing apparatus set forth in claim 1 or 3, characterized in that, on the occasion of acquiring the data for use in updating so as to execute the update of the data stored in the storage unit, the control means can generate an update start notification for designating a commencement of the update, and allow itself to execute such a control as transmitting the update start notification to an originating subscriber of the electronic mail through the communication unit.

40 [CLAIM 10]

45 The image processing apparatus set forth in either one of claims 1, 3 and 9, characterized in that, on the occasion of acquiring the update of the data with the result that the update of the data stored in the storage unit has been completed, the control means can generate update result information for designating a success of the update or a failure of the update, and allow itself to execute such a control as transmitting the update result information to an originating subscriber of the electronic mail through the

communication unit.

[CLAIM 11]

5 The image processing apparatus set forth in claim 2 or 3, characterized in that, on the occasion of acquiring the update of the data with the result that the update of the data stored in the storage unit has been completed, the control means can generate update result information for designating a success of the update or a failure of the update, and allow itself to execute such a control as transmitting the update result information to an originating subscriber of the update instructing information through the communication unit.

[CLAIM 12]

15 The image processing apparatus set forth in claim 2 or 3, characterized in that:

the storage unit can store identification information for the image processing apparatus, and

20 the control means can allow itself to execute such a control as acquiring the data for use in updating from the server connected to image processing apparatus the by the interposition of the computer network through the communication unit on the basis of the identification information for the image processing apparatus.

[CLAIM 13]

25 The image processing apparatus set forth in claim 12, characterized in that:

the update instructing information includes information concerning the data for use in updating, and

30 the control means can allow itself to execute such a control as acquiring the data for use in updating from the server connected to image processing apparatus the by the interposition of the computer network through the communication unit on the basis of the information concerning the data for use in updating and the identification information for the image processing apparatus.

[CLAIM 14]

40 The image processing apparatus set forth in claim 12 or 13, characterized in that the identification information for the image processing apparatus includes at least one or more of a serial number peculiar to the image processing apparatus, a product name, a model type, a version of the model type.

[CLAIM 15]

45 The image processing apparatus set forth in claim 13, characterized in that the information concerning the data for use in updating includes at least one or more of a kind of data for use in updating, a name of file, a name of program, a name of directory in which the data are stored.

[CLAIM 16]

50 A data processing system in which the image processing apparatus set forth in either one of claims 1 to 15 and a

server, which is provided with a database storing therein data for use in updating for controlling the operation of the image processing apparatus are connected with each other through a computer network, characterized in that:

5 the image processing apparatus comprises a communication unit which can transmit identification information for the image processing apparatus to the server, and receive the data for use in updating from the database; and

10 the server comprises a communication unit for receiving the identification information for the image processing apparatus, and a control means for acquiring the data for use in updating from the database on the basis of the identification information for the image processing apparatus, and allowing itself to execute such a control as transmitting
15 the data for use in updating to the image processing apparatus through the communication unit.

[CLAIM 17]

The data processing system set forth in claim 16, characterized in that:

20 in the image processing apparatus,
the communication unit thereof can transmit information concerning the data for use in updating; and

in the server,
the communication unit thereof can receive the
25 information concerning the data for use in updating,

the control means can acquire the data for use in updating from the database on the basis of the identification information for the image processing apparatus and the information concerning the data for use in updating, and
30 allow itself to execute such a control as transmitting the data for use in updating to the image processing apparatus through the communication unit.

[CLAIM 18]

A data processing system in which a maintenance terminal
35 for instructing an update of data to control the operation of an image processing apparatus and the image processing apparatus, which is provided with a storage unit for storing the data to control the operation of the image processing apparatus in such a manner of being capable of updating the
40 data, are connected with each other through a computer network, characterized in that:

the maintenance terminal comprises:

a storage unit for storing data for use in updating to control the operation of the image processing apparatus; and

45 a communication unit for transmitting an update instructing information to instruct an update of data and the data for use in updating stored in the storage unit by making use of a special protocol,

the image processing apparatus comprises:

50 a communication unit which can receive the update

instructing information and the data for use in updating by making use of a special protocol; and

a control means for executing such a control as updating the data stored in the storage unit of the image processing unit to the received data for use in updating on the basis of the update instructing information.

[CLAIM 19]

The data processing system set forth in claim 18, characterized in that the special protocol is ftp or http.

[CLAIM 20]

The data processing system set forth in claim 18, characterized in that:

the image processing apparatus is a server type image processing apparatus having a function as a ftp server or a http server;

the maintenance terminal is connected to the image processing apparatus through the computer network

[CLAIM 21]

The data processing system set forth in claim 18 or 20, characterized in that:

the maintenance terminal comprises:

an input unit for inputting the update instructing information;

a display unit for displaying the update instructing information inputted by the input unit; and

a control means for acquiring the update instructing information inputted by the input unit while using a browser function, and allowing itself to execute such a control as displaying the update instructing information on the display unit.

[CLAIM 22]

The data processing system set forth in claim 21, characterized in that, in the maintenance terminal:

the input unit can designate the data for use in updating stored in the storage unit out of display information displayed on the display unit by the operation of the control means while using the browser function;

the control means can acquire the data for use in updating, which has been designated by the input unit, from the storage unit, and allow itself to execute such a control as transmitting the acquired data for use in updating to the image processing apparatus by making use of ftp or http through the communication unit.

[DETAILED DESCRIPTION OF THE INVENTION]

[0001]

[TECHNICAL FIELD TO WHICH THE INVENTION BELONGS]

The present invention relates to an image processing apparatus and a data processing system for updating data stored in a storage unit.

[DESCRIPTION OF THE PRIOR ART]

[0002]

Heretofore, in the image processing apparatus, in case of
executing to upgrade a version of an application data such as
a firmware, etc., and set up or update various data, a person
5 who is responsible for carrying out the maintenance has to
proceed to an actual locale, where the updating is to be
executed, while carrying in his hand special tools and a
personal notebook computer in which data for upgrading the
version and set-up or data for use in updating have been
10 stored in a portable recording medium. In the actual locale,
required data are transferred with the result that the image
processing apparatus and the personal notebook computer are
connected with each other through parallel cables, etc. Thus,
in this manner, the upgrade of version of the application
15 data and the set-up or update of various data, etc., are
executed. (See, for example, the following Patent Document 1)

[0003]

Recently, in consonance with the development of advanced
computer network technology, many image processing
20 apparatuses can be connected to a computer network, and in
accordance with a predetermined rule, it becomes possible to
transmit an instruction (command) through a firewall from the
outer side to the image processing apparatuses. For this,
there is an electronic mail as common means. For example,
25 when application data such as a firmware for the image
processing apparatus is attached to an electronic mail and,
thereafter, the electronic mail is transmitted to image
processing apparatuses, the updating of application data can
also be executed at remote areas. (See, for example, the
30 following Patent Document 2) It has been disclosed that a
file, in which a method of accessing a file designated by an
electronic mail is described, is attached to the electronic
mail and, thereafter, the electronic mail is transmitted to
an image processing apparatus. The image processing
35 apparatus can then analyze this access method so as to
acquire the designated file. (See, for example, the following
Patent Document 3)

[0004]

[Patent Document 1]

40 Japanese Patent Application Laid-open Publication No.
2000-322244

[Patent Document 1]

Japanese Patent Application Laid-open Publication No.
2000-296484

45 [Patent Document 1]

Japanese Patent Application Laid-open Publication No. Hei
11-3299

[0005]

As is described above, when a person, who is responsible
50 for carrying out the maintenance, proceeds to the actual

locale to upgrade a version of a firmware, etc., for an image processing apparatus, the maintenance person must prepare a recording medium on which data required for upgrading the version are recorded and carry special tools and a personal notebook computer in his hand. Since, depending on the image processing apparatus models, types of the special tool differ from each other, the person who is responsible for carrying out the maintenance must prepare and carry a plurality of recording media and a plurality of special tools that match all models of all image processing apparatuses on the occasion of working at a plurality of destinations. As a result, a great amount of labor and attendant high costs is caused. In addition, since the transfer speed is low when a parallel cable and a USB cable are used to transfer data from a recording medium to an image processing apparatus, the time required for a data transfer is extended and job efficiency is reduced.

[0006]

On the other hand, when an electronic mail is employed to update application data in accordance with an instruction received from a maintenance person at a remote area, the data for use in updating must be enclosed with the electronic mail. However, when the data for use in updating to be enclosed are program data, such as firmware programs, the volume of the attached file is increased and may exceed the reception capacity of an electronic mail server, and an extended period may be required for communication. Furthermore, because of recent improvements in computer network security technologies, entries made from outside a system to an internal, local computer network are sometimes limited. For example, when a file attached to an electronic mail includes a computer executable program, access may be prevented by a firewall provided at the entrance of the local computer network.

[0007]

It is a problem of the present invention to provide an image processing apparatus and a data processing system, which can allow themselves to execute efficiently and easily an update of data without requiring any special tools and hardware in case of executing an update of firmware and various set-up data.

[0008]

[MEANS FOR SOLVING THE PROBLEM]

In order to solve the foregoing problem, the invention described in claim 1 relates to an image processing apparatus, which includes a storage unit for storing data to control the operation of the image processing apparatus in such a manner of being capable of updating the data, which is characterized by comprising:

a communication unit for receiving an electronic mail, which includes an instruction to acquire an data for use in

updating so as to execute an update of the data; and

control means for acquiring the data for use in updating in accordance with the instruction included in the electronic mail so as to control the update of the data stored in the storage unit.

[0009]

Therefore, the image processing apparatus can allow itself to obtain the data for use in updating so as to acquire an instruction for executing the update of the data through the electronic mail, and can execute the update of the data stored in the storage unit by acquiring the data for use in updating in accordance with the instruction. Thus, it becomes possible to execute the update of the data for the image processing apparatus by, for example, transmitting the electronic mail through a computer network from the remote place. In addition, by making use of the electronic mail, for example, even if such an image processing apparatus as connecting with a computer network constructed within a local area is used, it can be possible to execute the update of the data while keeping a computer network's security level constant. Accordingly, in order to execute the update of the data, it is unnecessary for the person, who carries out a maintenance work for the image processing apparatus, to proceed to a locale place, where the image processing apparatus is installed. As a result, the working efficiency is remarkably improved.

[0010]

The invention described in claim 2 relates to the image processing apparatus set forth in claim 1, which is characterized in that:

the communication unit can receive update instructing information, which includes an instruction to acquire the data for use in updating so as to execute the update of the data by making use of ftp (file transfer protocol) or http (hyper-text transfer protocol); and

the control means can control the update of the data stored in the storage unit by acquiring the data for use in updating in accordance with the instruction included in the update instructing information.

[0011]

Therefore, the image processing apparatus can allow itself to obtain the data for use in updating so as to acquire an instruction for executing the update of the data by making use of ftp or http, and can execute the update of the data stored in the storage unit by acquiring the data for use in updating in accordance with the instruction. Thus, it makes possible to allow the image processing apparatus to execute the update of the data stored in the storage unit from a remote place by, for example, utilizing a technology used commonly such as the Internet.

[0012]

The invention described in claim 3 relates to the image processing apparatus set forth in claim 1 or 2, which is characterized in that:

5 the storage unit can store information concerning an acquisition method for acquiring the data for use in updating from a server connected thereto through a computer network; and

10 the control means can allow itself to execute such a control as acquiring the data for use in updating through the communication unit from the server connected through the computer network on the basis of the information concerning the acquisition method for acquiring the data for use in updating stored in the storage unit.

15 [0013]

Therefore, the image processing apparatus can previously store information concerning the method of acquiring the data for use in updating. When the instruction to execute the update of the data has been acquired, the image processing apparatus can acquire the data for use in updating from the server, which is connected with the computer network, in accordance with the acquisition method. By this, on the occasion of instructing the update of the data, it is not necessary to transmit the data for use in updating to the image processing apparatus. For example, even if such an image processing apparatus as connected with a computer network constructed within a local area is used, it becomes possible to acquire positively the data for use in updating.

[0014]

30 The invention described in claim 4 relates to the image processing apparatus set forth in claim 3, which is characterized in that:

the communication unit can receive the information concerning the acquisition method for acquiring the data for use in updating; and

35 the control means can execute such a control as storing the information concerning the acquisition method for acquiring the data for use in updating in the storage unit, and thereby setting up the acquisition method for acquiring the data for use in updating.

[0015]

40 Therefore, it becomes possible to set up the acquisition method of acquiring the data for use in updating from the remote place by, for example, transmitting the information concerning the acquisition method of acquiring the data for use in updating and storing the data for use in updating in the storage unit. By this, in order to set up the acquisition method for the data for use in updating, it is unnecessary for the person, who carries out a maintenance work for the image processing apparatus, to proceed to a

locale place, where the image processing apparatus is installed. As a result, the working efficiency is improved. In addition, in case that there is a change in a set-up of the server and that any trouble is generated, it makes possible to deal with those matters by changing promptly in the set-up of the acquisition method. Accordingly, it can be possible to improve a feeling of satisfaction for the customer.

[0016]

The invention described in claim 5 relates to the image processing apparatus set forth in claim 3 or 4, which is characterized in that the acquisition method for acquiring the data for use in updating can acquire the data for use in updating from the server by making use of either one of the ftp, http and an electronic mail.

[0017]

Therefore, since the image processing apparatus can acquire the data for use in updating by an acquisition method in response to the existing state, which is appropriately selected from a plurality of acquisition methods, it becomes possible to acquire positively the data for use in updating.

[0018]

The invention described in claim 6 relates to the image processing apparatus set forth in claim 4, which is characterized in that the communication unit can receive the information concerning the acquisition method for acquiring the data for use in updating by making use of either one of the ftp, http and an electronic mail.

[0019]

Therefore, the image processing apparatus can receive the information concerning the acquisition method of acquiring the data for use in updating by making use of either preferable one of ftp, http and an electronic mail.

[0020]

The invention described in claim 7 relates to the image processing apparatus set forth in claim 3, which is characterized by further comprising an input unit for inputting the information concerning the acquisition method for acquiring the data for use in updating,

wherein the control means can allow itself to execute such a control as storing the information concerning the acquisition method for acquiring the data for use in updating in the storage unit, and a further control as setting up the acquisition method for acquiring the data for use in updating.

[0021]

Therefore, for example, when the person who is responsible for carrying out the maintenance, proceeds to the actual locale where the image processing apparatus is installed, it becomes possible to set up directly the acquisition method through the input unit of the image

processing apparatus. By this, it makes possible to set up positively the acquisition method of the data for use in updating.

[0022]

5 The invention described in claim 8 relates to the image processing apparatus set forth in either one of claims 1 to 7, which is characterized in that data for use in updating comprises at least one or more of firmware for controlling the operation of the image processing apparatus, and set-up data to set up functions of the image processing apparatus.

[0023]

10 Therefore, it becomes possible to update automatically the firmware, etc., which requires periodically to upgrade its version in response to the progress of the technology. In addition, it makes possible to change easily in set-up data, etc., which are changed in response to the user's requirement. By this, for example, in case of exchanging the image processing apparatus for the other one, it can be possible to make easily a spec. style similar to that of the previous image processing apparatus. The image processing apparatus has a good convenience of use.

[0024]

15 The invention described in claim 9 relates to the image processing apparatus set forth in claim 1 or 3, which is characterized in that, on the occasion of acquiring the data for use in updating so as to execute the update of the data stored in the storage unit, the control means can generate an update start notification for designating a start of the update, and allow itself to execute such a control as transmitting the update start notification to an originating subscriber of the electronic mail through the communication unit.

[0025]

20 Therefore, through the electronic mail, it becomes possible to notify the subscriber, who has transmitted the instruction for updating the data, of a state that the update of the data has been started. By this, for example, even when the instruction for updating the data has been outputted at the remote place by the person who is responsible for the maintenance work, it makes possible for the maintenance person to hold the working process, and moreover, even if any trouble is caused, the maintenance person can promptly deal with the trouble.

[0026]

25 The invention described in claim 10 relates to the image processing apparatus set forth in either one of claim 1, 3, and 9, which is characterized in that, on the occasion of acquiring the update of the data with the result that the update of the data stored in the storage unit has been completed, the control means can generate update result

information for designating a success of the update or a failure of the update, and allow itself to execute such a control as transmitting the update result information to an originating subscriber of the electronic mail through the communication unit.

[0027]

Therefore, through the electronic mail, it becomes possible to notify the subscriber, who has transmitted the instruction for updating the data, about the result of the update of the data. By this, for example, even when the instruction for updating the data has been outputted at the remote place by the person who is responsible for the maintenance work, it makes possible for the person to hold the working process with the result that, if any trouble is caused, the person can promptly deal with the trouble.

[0028]

The invention described in claim 11 relates to the image processing apparatus set forth in claim 2 or 3, which is characterized in that:

the storage unit can store identification information for the image processing apparatus, and

the control means can allow itself to execute such a control as acquiring the data for use in updating from the server connected to image processing apparatus the by the interposition of the computer network through the communication unit on the basis of the identification information for the image processing apparatus.

[0029]

Therefore, it becomes possible to notify the subscriber, who has transmitted the instruction for updating the data, about the result of the update of the data. By this, for example, even when the instruction for updating the data has been outputted at the remote place by the person who is responsible for the maintenance work, it makes possible for the person to hold positively presence or nothing of the completion of the update of the data with the result that, if any trouble is caused, the person can promptly deal with the trouble.

[0030]

The invention described in claim 12 relates to the image processing apparatus set forth in claim 3, which is characterized in that:

the update instructing information includes information concerning the data for use in updating, and

the control means can allow itself to execute such a control as acquiring the data for use in updating from the server connected to image processing apparatus the by the interposition of the computer network through the communication unit on the basis of the information concerning the data for use in updating and the identification

information for the image processing apparatus.

[0031]

Therefore, the image processing apparatus can acquire from the server the data for use in updating corresponding to the image processing apparatus on the basis of the identification information for the image processing apparatus stored in the storage unit. By this, on the occasion of transmitting the update instruction of data, it is not necessary to specify in detail the data for use in updating with the result that trouble at the time of instructing the update of data can be saved. In addition, since the identification information for the image processing apparatus previously stored in the storage unit is utilized, it becomes possible to acquire precisely necessary data without generating artificial errors such as an input error in case of specifying the data for use in updating.

[0032]

The invention described in claim 13 relates to the image processing apparatus set forth in claim 12, which is characterized in that:

the update instructing information includes information concerning the data for use in updating, and

the control means can allow itself to execute such a control as acquiring the data for use in updating from the server connected to image processing apparatus the by the interposition of the computer network through the communication unit on the basis of the information concerning the data for use in updating and the identification information for the image processing apparatus.

[0033]

Therefore, since the image processing apparatus can acquire the data for use in updating from the server on the basis of the identification information for the image processing apparatus stored in the storage unit and the information concerning the data for use in updating included in the update instructing information, it becomes possible to specify precisely necessary data and acquire the same. In addition, the person, who is responsible for the maintenance work and instructs the update of data, can allow the image forming apparatus to acquire desired data by causing the update instructing information to include the information concerning the data for use in updating.

[0034]

The invention described in claim 14 relates to the image processing apparatus set forth in claim 12 or 13, which is characterized in that the identification information for the image processing apparatus includes at least one or more of a serial number peculiar to the image processing apparatus, a product name, a model type, a version of the model type.

[0035]

Therefore, it becomes possible to allow the image forming apparatus to acquire the data for use in updating on the basis of various information peculiar to the image processing apparatus and their combined information.

[0036]

The invention described in claim 15 relates to the image processing apparatus set forth in claim 13, which is characterized in that the information concerning the data for use in updating includes at least one or more of a kind of data for use in updating, a name of file, a name of program, a name of directory in which the data are stored.

[0037]

Therefore, it makes possible to specify the data for use in updating on the basis of various information, and allow the image processing apparatus to acquire the data for use in updating by specifying positively the desired data for use in updating.

[0038]

The invention described in claim 16 relates to a data processing system in which the image processing apparatus set forth in either one of claims 1 to 15 and a server, which is provided with a database storing therein data for use in updating for controlling the operation of the image processing apparatus are connected with each other through a computer network, which is characterized in that:

the image processing apparatus comprises a communication unit which can transmit identification information for the image processing apparatus to the server, and receive the data for use in updating from the database; and

the server comprises a communication unit for receiving the identification information for the image processing apparatus, and a control means for acquiring the data for use in updating from the database on the basis of the identification information for the image processing apparatus, and allowing itself to execute such a control as transmitting the data for use in updating to the image processing apparatus through the communication unit.

[0039]

Since, in this manner, the data for use in updating, which are necessary to execute the update of data for the image processing apparatus, are previously stored in the server connected thereto through a computer network, it can be possible to allow the image processing apparatus to acquire the data for use in updating by taking access to the server only in case of required. In addition, the server can manage the data for use in updating in the lump, which are necessary to execute the update of data for the image processing apparatus, by storing those in a database, it can be possible to provide the image processing apparatus with necessary data while utilizing effectively limited resources,

and thereby intending an efficient application of the data processing system.

[0040]

The invention described in claim 17 relates to a data processing system set forth in claim 16, which is characterized in that:

in the image processing apparatus,
the communication unit thereof can transmit information concerning the data for use in updating; and

in the server,
the communication unit thereof can receive the information concerning the data for use in updating,

the control means can acquire the data for use in updating from the database on the basis of the identification information for the image processing apparatus and the information concerning the data for use in updating, and allow itself to execute such a control as transmitting the data for use in updating to the image processing apparatus through the communication unit.

[0041]

Therefore, on the basis of the identification information for image processing and the information concerning the update date, the server can refer to data in the database and acquire efficiently and positively desired data, and further transmit the desired data to the image processing apparatus.

[0042]

The invention described in claim 18 relates to a data processing system in which a maintenance terminal for instructing an update of data to control the operation of an image processing apparatus and the image processing apparatus, which is provided with a storage unit for storing the data to control the operation of the image processing apparatus in such a manner of being capable of updating the data, are connected with each other through a computer network, which is characterized in that:

the maintenance terminal comprises:

a storage unit for storing data for use in updating to control the operation of the image processing apparatus; and

a communication unit for transmitting an update instructing information to instruct an update of data and the data for use in updating stored in the storage unit by making use of a special protocol,

the image processing apparatus comprises:

a communication unit which can receive the update instructing information and the data for use in updating by making use of a special protocol; and

a control means for executing such a control as updating the data stored in the storage unit of the image processing unit to the received data for use in updating on the basis of the update instructing information.

[0043]

Therefore, in case of executing the update of data for the image processing apparatus, it makes possible to transfer the data for use in updating from the maintenance terminal to the image processing apparatus by making use of a special protocol. By this, for example, the time required for transferring data can be shortened so as to achieve an efficient operation as compared to the case of transferring data by making use of a parallel cable or USB cable.

[0044]

The invention described in claim 19 relates to the data processing system set forth in claim 18, which is characterized in that the special protocol is ftp or http.

[0045]

Therefore, it becomes possible to transfer data by making use of an appropriate protocol carrying the data transfer, thereby enabling the system to transfer the data efficiently.

[0046]

The invention described in claim 20 relates to the data processing system set forth in claim 18, which is characterized in that:

the image processing apparatus is a server type image processing apparatus having a function as a ftp server or a http server;

the maintenance terminal is connected to the image processing apparatus through the computer network

[0047]

Therefore, since it becomes possible to connect the maintenance terminal with the data processing system through the computer network constructed by the image processing apparatus having a server function, the maintenance terminal and the image processing apparatus can be connected with each other in a manner of peer to peer. By this, the data transfer between the maintenance terminal and the image processing apparatus can be efficiently carried out, and further it can be possible to improve security in case of the data transfer. In addition, it makes possible to decrease the cost, because it is not necessary to provide the system with other servers in order to construct the computer network.

[0048]

The invention described in claim 21 relates to the data processing system set forth in claim 18 or 20, which is characterized in that:

the maintenance terminal comprises:

an input unit for inputting the update instructing information;

a display unit for displaying the update instructing information inputted by the input unit; and

a control means for acquiring the update instructing information inputted by the input unit while using a browser

function, and allowing itself to execute such a control as displaying the update instructing information on the display unit.

[0049]

5 Therefore, it becomes possible to allow the maintenance terminal to execute the input of the update instructing information on the basis of the display information displayed on the display unit through the browser function. By this, it can be possible to instruct the data transfer by a simple operation, with the result of a good operation ability.

[0050]

The invention described in claim 22 relates to the data processing system set forth in claim 21, which is characterized in that, in the maintenance terminal:

15 the input unit can designate the data for use in updating stored in the storage unit out of display information displayed on the display unit through the browser function operated by the control means;

20 the control means can acquire the data for use in updating, which has been designated by the input unit, from the storage unit, and allow itself to execute such a control as transmitting the acquired data for use in updating to the image processing apparatus by Figure making use of ftp or http through the communication unit.

[0051]

25 Therefore, in case of allowing the image processing apparatus to execute the update of data, the maintenance terminal can execute the update of data by making use of such as a common personal computer, which is provided therein with the browser function without being necessary to provide special tools. In addition, for example, the time required for transferring data can be shortened by executing the transmission of data through the ftp or http as compared to the case of transferring data by making use of a parallel cable or USB cable.

[0052]

[EXEMPLIFIED MODE OF THE INVENTION]

30 Hereinafter, an exemplified mode of the present invention will be described in detail with reference to the accompanying drawings. However, a scope of the invention is not limited by examples shown in the drawings.

[0053]

In the first place, the constitution of the exemplified mode is described.

45 Fig. 1 is a conceptual diagram showing the system constitution of a data processing system 100 concerning the exemplified mode. As shown in Fig. 1, the data processing system 100 comprises: maintenance terminals 1a and 1b; an image processing apparatus 2; and a server 3. The image processing apparatus 2, the maintenance terminal 1b and the

server 3 are connected with one another through the computer network N so as to be able to access one another, while the image processing apparatus 2, the maintenance terminal 1a and the image processing apparatus 2 are connected with each other through an intranet L, which is a computer network deployed for a limited area.

[0054]

The maintenance terminals 1a and 1b can be, for example, portable telephone terminals such as portable telephones or PHSes (Personal Handy-phone Systems), or personal notebook computers (PCs). Each of the maintenance terminals 1a and 1b, which include an electronic mail software for receiving electronic mails and browser software for browsing web pages, employs an electronic mail or a browser to generate instructing information related to maintenance, and to transmit this information to the image processing apparatus 2. The maintenance terminal 1a is connected to the image processing apparatus 2 through the intranet L in the inside of the system, while the maintenance terminal 1b is connected to the image processing apparatus 2 through the open computer network N from the outside of the system.

[0055]

The image processing apparatus 2 can be, for example, a copying machine, a printer, an MFP (Multifunction Peripheral), a printing machine, a printer data provision terminal (e.g., a kiosk terminal), etc. Further, software for providing contents to be browsed by a WWW (World Wide Web) browser is installed in the image processing apparatus 2, so that the image processing apparatus 2 includes a web server function in addition to the image processing function. The image processing apparatus 2 is connected to the open computer network N such as the Internet, etc., through a proxy server (not shown), which constitutes a firewall.

[0056]

The server 3 is constituted by a general purpose personal computer, and includes firmware, consonant with the model of the image processing apparatus; and a database, in which data for use in updating, such as various set-up data, are stored in accordance with the hierarchical directory structure. Upon receiving a request from the image processing apparatus 2, the server 3 provides the image processing apparatus 2 with required data through the computer network N.

[0057]

The computer network N includes various communication lines such as a telephone line network, an ISDN line network, a special line network, a mobile communication network, a satellite line network, a CATV line network, etc., and at least one base station of the Internet service provider through which these networks are connected. The computer network does not need to be connected always, but it is

preferable to be able to connect by request optionally. In addition, it is desired for the computer network N to constitute such a network as holding security for allowing only specified users to make access thereto in view of reliability of data management.

[0058]

The intranet L is constructed by connecting the server and a plurality of clients with one another, and therefore it is a computer network deployed for a limit area within which data and resources are held in common between the server and the plurality of clients. It should be noted that, in the exemplified mode of the present invention, is described an example, in which a computer network is constructed by the image processing apparatus as a server and the maintenance terminal 3 as a client, is described. It should be further noted that, in the intranet L, it is desired for the computer network N to constitute such a network as holding security for allowing only specified users to make access thereto in view of reliability of data management.

[0059]

Subsequently, each of units or sections for constituting the data processing system 100 is described.

[0060]

In the first place, the maintenance terminals 1a and 1b are now described. It should be noted that the constitution and operation of these terminals are specifically described with respect to the maintenance terminal 1a as a representative of them, because substantially the same arrangement is employed for the maintenance terminals 1a and 1b. Fig. 2 is a block diagram showing the constitution in a functional state of a maintenance terminal 1a. As shown in Fig. 2, the maintenance terminal 1a is constituted of a CPU as a control means, input unit 12, display unit 13, communication unit 14, RAM 15, storage unit 16, all of which are connected one another through a bus 17.

[0061]

The CPU (Central Processing Unit) 11 as a control means can open various system programs stored in the storage unit 16, executes the programs, and drive/control each of sections of the maintenance terminal 1a. In addition, the CPU 11 can open various system programs stored in the storage unit 16, executes the programs in accordance with an input operation in the input unit 12, and realizes various functions of the maintenance terminal 1a.

[0062]

Specifically, the CPU 11 can open an acquisition method set-up program and a data updating instruction program, which are stored in the storage unit 16, and execute an acquisition method set-up processing (see Fig. 6) and a data updating instruction processing (see Fig. 8).

[0063]

The input unit 12 includes character keys, numeric keys and various other types of keys, which are correlated with various functions, and outputs an operation signal that corresponds to a manipulated key to the CPU 11.

[0064]

The display unit 13 has a display screen such as an LCD (Liquid Crystal Display), etc., and can display inputted contents entered through the input unit 12 and various displayed screens on the basis of displaying information inputted from the controller 11.

[0065]

The communication unit 14 is constituted of various interfaces such as a computer network interface card, a modem (modulator/demodulator), a USB (Universal Serial Bus), or the communication function of a portable cellular telephone set, etc.

[0066]

The RAM (Random Access Memory) 15 forms a work area to temporarily store various programs to be executed by the controller 11 and data related to these programs.

[0067]

The storage unit 16 includes a recording medium such as a semiconductor storage device, which is able to rewrite as a flash memory, etc., and stores various programs to be executed by the CPU 11 and data concerning these programs in the recording medium. Now, it should be noted that each part or the whole of the programs and data may be received by the communication unit 14 from another equipment through a transmission medium such as a communication line, etc., and stored in the recording medium. Further, the programs and data may be transmitted to another equipment through a transmission medium such as a communication line, etc., and installed.

[0068]

In addition, the storage unit 16 can store data such as operation data, set-up data, etc., which is required at the time of executing the update of data in the image processing apparatus 2. Namely, in case that the maintenance terminal 1a is connected to the image processing apparatus through the intranet L, the storage unit 16 can store the data for use in updating transmitted from the maintenance terminal 1a to the image processing apparatus by making use of ftp or http.

[0069]

Next, the image processing apparatus 2 will now be described. As is shown in Fig. 3, the image processing apparatus 2 comprises a CPU 21 as a control means, an input unit 22, a display unit 23, a communication unit 24, a RAM 25, an EEPROM 26, a printing unit 27 and a storage unit 28, all of which are interconnected through a bus 29. Here, the

EEPROM 26 and the storage 28 constitute a storage section of the present invention.

[0070]

5 The CPU 21 as a control means opens a designated program out of various programs, which are stored in the storage unit 28, at a work area (not shown) in the RAM 25, executes various processing in accordance with the program while responding to data inputted from the input unit 22 and the communication unit 24, and stores the result of processing in
10 a work memory within the RAM 25. Further, the CPU 21 generates display information for displaying the processing result and outputs it to the display unit 23. Specifically, the CPU 21 can read out the data update processing program from the storage unit 28, and execute a data update
15 processing (refer to Fig. 11) describer later.

[0071]

The input unit 22 includes a keyboard provided thereon with a cursor key, a numeric input key and various function keys, and can output a depression signal that corresponds to
20 a depressed key on the keyboard to the CPU 21. Here, it should be noted that the input unit 22 may includes a pointing device such as a mouse, a touch panel, etc., and other input units.

[0072]

25 The display unit 23 has a display screen made a CTR (Cathode Ray Tube), an LCD, etc., and can display data to be displayed on the display screen through the input unit 22 and the communication unit 24 in accordance with the instruction based on a display signal inputted from the CPU 21.

30 [0073]

The communication unit 24 is an interface connectable to a transmission medium, which is connected to a computer network N such as a LAN, WAN, or the Internet, etc. The communication unit 24 is constituted of a modem or a terminal
35 adaptor (TA), etc., and can perform to control communication with external equipments through a communication line such as, for example, a telephone line, an ISDN line, a wireless communication line, a special line or a CATV line, etc.

[0074]

40 The RAM 25 can form a work area for temporarily storing various programs to be executed by the CPU 21 and data processed by these programs.

[0075]

45 The EEPROM (Electrically Erasable and Programmable Read-Only Memory) 26 is a recording medium subjected to limitation on read and write of data, which forms a part or the whole of the storage unit, and can store data that are less frequently rewritten. For example, the EEPROM 26 can store application data concerning the usage of the image processing apparatus 2,
50 identification information for identifying an individual

image processing apparatus 2 (e.g., a serial number peculiar to the image processing apparatus 2, a product name, a model type, a version of the model type). In addition, the designated acquisition method for obtaining data for use in updating from the server 3 is stored in the EEPROM 26.

[0076]

The printing unit 27 includes a sheet supply unit, wherein a continuous form or separate sheets are stacked as printing sheets, and a sheet discharge unit (neither of which is shown). The printing unit 27 employs an electrophotographic system that uses an infrared laser beam or a light beam emitted by an LED (Light-Emitting Device) to output print data that have been received from the CPU 21 or from an external device through the communication unit 24, transfers the print data to a printing sheet, and discharges the resultant printed sheet.

[0077]

The storage unit 28 is supplied with a recording medium (not shown) on which programs and data are stored in advance. This recording medium is a magnetic or optical recording medium or a semiconductor memory, which is fixed to or detachably mounted on the storage unit 28. A system program, various process programs corresponding to this system and data processed by these programs are stored on the recording medium.

[0078]

In addition, programs, data, etc., to be stored in the recording medium may be stored by receiving their parts or the whole thereof transmitted from other peripheral equipments such as a server, a client, etc., to the communication unit 24 through a transmission medium of the computer network line such as, WAN, LAN, etc. Further, the recording medium may be a recording medium for the server constructed on the computer network. Still further, it may be preferable to constitute such that the programs are transmitted to the peripheral equipment such as a server or a client through the transmission medium such as the computer network, etc., and installed in the equipment.

[0079]

Subsequently, the server 3 will now be described. Fig. 4 is a block diagram showing the constitution in a functional state of a server. As is shown in Fig. 4, the server 3 comprises: a control means 31, a RAM 32, a communication unit 33 and a database (hereinafter, described as DB) 34, all of which are interconnected by a bus.

[0080]

In response to a requesting instruction received from the image processing apparatus 2 through the communication unit 33, the CPU 31 as a control means allows itself to acquire designated data from the DB 34 and transmit the data to the

requesting source.

[0081]

The requesting instruction received through the communication unit 33 and data acquired from the DB 34 are temporarily stored in a predetermined work area in the RAM 32.

[0082]

The communication unit 33 is an interface connectable to a transmission medium, which is connected to a computer network N such as LAN, WAN or the Internet. The communication unit 33 is constituted of a modem or a terminal adaptor, etc., and control communication with external peripheral equipments through a communication line such as a telephone line, an ISDN line, a wireless communication line, a special line or a CATV line, etc.

[0083]

The DB 34 is used to store data having a predefined form for the collective data management. Specifically, application data such as firmware data, etc., concerning the image processing apparatus 2 and set-up data are stored in a predetermined form.

[0084]

Fig. 5 is a diagram showing an example of data structure for a DB shown in Fig. 4. As is shown in Fig. 5, in the DB 34, a plurality of directories are prepared by employing a hierarchical directory structure, and data for use in updating are sorted and stored in these directories. First, sub-directories for the individual models of the image processing apparatuses 2 are included in the topmost directory of the DB 34, under model names such as "7155", "7165" and "7085", as directory names.

[0085]

Further, each sub-directory for the model includes directories corresponding to the individual versions, with upgraded version names "newest", "ver40" and "ver50" entered as the directory names. Then, each of the version directories includes file groups composed of data for use in updating, and application data such as "I0.bin", "I1.bin", ". . .", "V1.bin" are stored in these files. In this embodiment, in each version directory, file name "I0.bin" is employed to store application data of the same type, e.g., a program for the operating panel. Further, in the "custom" directory, special firmware or set-up data are stored that are consonant with the specifications of a user.

[0086]

Therefore, for example, in case that the model name as identification information of the image processing apparatus 2 is attached to the requesting instruction sent from the image processing apparatus 2, respective directories of every corresponding model can be acquired. Further, from these directory the "Newest" directory can be acquired, and a file

for an application data of the latest version corresponding to the designated model type can be acquired. In addition, in case of obtaining data for use in updating other than the latest version, the directory name of a desired version need only be designated in the request information for the corresponding data for use in updating to be acquired. It should be noted that, it becomes possible of course to be properly changeable by user's set-up, however, such a style as acquiring the application data of the latest version corresponding to the model name by making use of a default is here described.

[0087]

In addition, to obtain special firmware or set-up data consonant with the specifications of a user, the "custom" directory and the program name need only be designated using the URL. Therefore, when the current image processing apparatus 2 of the user is to be exchanged for a new product, the set-up data consonant with the specification user need only be stored in the "custom" directory, and after the products are exchanged, set-up data consonant with the specification of the user need only be obtained from the "custom" directory, and the set-up data for the new image processing apparatus updated. As a result, the new image processing apparatus can be employed in accordance with the same specifications as was the old image processing apparatus, and satisfactory usability is thereby ensured.

[0088]

The operation for the exemplified mode will now be described. It should be noted that, as a preamble of the description for the operation, a program for realizing processes described in the following flowchart is formed such that the CPU 11 for the maintenance terminals 1a and 1b and the CPU 21 for the image processing apparatus 2 are stored in the storage unit 16 and the storage unit 28, respectively, in a manner of readable program code. Therefore, the CPU 11 and the CPU 21 can carry out successively the operation in accordance with the program code.

[0089]

Fig. 6 is a flowchart showing the acquisition method set-up processing executed by the maintenance terminals 1a and 1b. In the acquisition method set-up processing, the acquisition method, whereby the image processing apparatus 2 accesses the server 3 and obtains, from the DB 34, the data for use in updating that are required to update the application data, is designated in advance. This processing is performed when, for example, a person responsible for performing the maintenance proceeds to an actual area whereat an image processing apparatus is installed. Therefore, from the security viewpoint, it is preferable that the maintenance terminal 1a, connected to the intranet L provided in the

organization, execute this processing. It should be noted that, in the following explanation, the acquisition method is designated for execution through the maintenance terminal 1a; however, the acquisition method can also be directly designated through the input unit 22 of the image processing apparatus 2.

[0090]

In the acquisition method set-up processing shown in Fig. 6, first, the maintenance terminal 1a accesses the image processing apparatus 2 through the intranet L. Subsequently, when an instruction to activate the browser is entered through the input unit 12, the CPU 11 activates the browser, and when an acquisition method set-up request is entered by the person responsible for the maintenance on the screen displayed by the browser, the information for the set-up request is transmitted to the image processing apparatus 2 (step S1).

[0091]

Then, the maintenance person enters a maintenance password and transmits the password to the image processing apparatus 2. The CPU 11 distinguishes a state whether the access is permitted by the image processing apparatus 2 (step S2). When the access is not permitted (NO at step S2), an error screen is displayed on the display unit 13, and the processing is thereafter terminated. When the access is permitted by the image processing apparatus 2 (YES at step S2), the type of acquisition method to be designated is distinguished based on the instruction entered through the operating unit 12 (step S3).

[0092]

In case that ftp (file transfer protocol) is selected as the data acquisition method, instructing information for the ftp set-up is transmitted to the image processing apparatus 2 (step S41). Then, when ftp set-up input screen data are received from the image processing apparatus 2, a corresponding ftp set-up input screen (see a figure (a) in Fig. 7) is displayed on the display unit 13. In case that http (hypertext transfer protocol) is selected as the data acquisition method, the CPU 11 transmits instructing information for setting up the http to the image processing apparatus 2 (step S42). Then, when http set-up input screen data are received from the image processing apparatus 2, a corresponding http set-up input screen (see a figure (b) in Fig. 7) is displayed on the display unit 13. And, in case that an electronic mail is selected as the data acquisition method, the CPU 11 transmits instructing information for setting up an electronic mail to the image processing apparatus 2 (step S43), and when electronic mail set-up input screen data are received from the image processing apparatus 2, a corresponding electronic mail set-up input screen (see a

figure (c) in Fig. 7) is displayed on the display unit 13.

[0093]

Here, some examples of the set-up input screens displayed on the display unit 13 of the maintenance terminal 1a will now be described while making reference to Fig. 7. The figure (a) of Fig. 7 is a diagram showing an ftp set-up input screen 131. The ftp set-up input screen 131 includes: a dialogue box a1 for entering a server address for accessing the server 3 including the DB 34; dialogue boxes a2 and a3 for respectively entering a user's ID and a password, in order to authenticate the log-in at the server 3; and dialogue boxes a4 and a5 for respectively entering a firewall IP address and a port, in order to pass through the firewall FW and to access the Internet n1.

[0094]

In addition, the figure (b) in Fig. 7 is a diagram showing an http set-up input screen 132. As well as in the figure (a) in Fig. 7, the http set-up input screen 132 comprises: a dialogue box for entering the server address of the server 3, which has the DB34, for accessing the server 3; dialogue boxes for respectively entering a user's ID and a password in order to authenticate the log-in at the server 3; and dialogue boxes for respectively entering a firewall IP address and a port in order to pass through the firewall and to access the Internet N.

[0095]

Further, the figure (c) in Fig. 7 is a diagram showing an electronic mail set-up input screen 133. The electronic mail set-up input screen 133 comprises: a dialogue box for entering the electronic mail server address of the server 3; dialogue boxes for respectively entering a user's ID and a password in order to authenticate the log-in at the electronic mail server M; and a dialogue box for entering the electronic mail address into the server 3.

[0096]

Therefore, the maintenance person need only enter, in the dialogue boxes on one of the set-up input screens, corresponding set-up information, such as the communication parameters that are required for setting up the data acquisition method, so that each of the acquisition methods can be set up through the browser. It should be noted that the user's ID is identification information for specifying uniquely the maintenance person. Therefore, in order to execute a certification of the maintenance person, the image processing apparatus 2 is provided in the storage unit 28 thereof with a management file (not shown) in which the user's ID and the password are registered.

[0097]

Referring again to Fig. 6, when a set-up condition, a user's ID and a password are entered at one of the set-up

input screens that is displayed on the display unit 13 at step S5 (step S7), and when a transmitting instruction is entered through the input unit 12, the input information for the set-up condition, the user's ID and the password are transmitted, as the set-up information for the selected acquisition method, through the communication unit 14 to the image processing apparatus 2 (step S8). The CPU 11 performs an examination to distinguish a state whether a set-up completion notification has been received from the image processing apparatus 2, and distinguishes a state whether the set-up has been completed (step S9).

[0098]

When the set-up completion notification is received, the CPU 11 ascertains that the set-up has been completed (YES at step S9), and the processing is thereafter terminated. When an error notification is received, or when the set-up completion notification is not received after a predetermined period of time has elapsed, the CPU 11 ascertains that the set-up has not yet been completed (NO at step S9). Program control then returns to step S3, and the acquisition method is again selected, and the processes at steps S3 to S8 are repeated.

[0099]

Next, the data updating instruction processing executed by the maintenance terminal 1a or 1b or the image processing apparatus 2 will now be described. Here, it can be possible for the maintenance terminal 1a connected to the image processing apparatus 2 through intranet L to access the image processing apparatus 2 by means of ftp, http, or an electronic mail. On the other hand, it is preferable for the maintenance terminal 1b, which is connected to the image processing apparatus 2 through the computer network N, employ to access the image processing apparatus 2 by means of an electronic mail so as to keep the security in the intranet L.

[0100]

When the maintenance terminal 1a is connected to the image processing apparatus 2 through the intranet L, it makes possible for the image processing apparatus 2 to acquire the data for use in updating from the DB 34 of the server 3 and also acquire the data for use in updating stored in the storage unit 16 of the maintenance terminal 1a. Therefore, hereinafter, the case that the data updating instruction processing is executed by the maintenance terminal 1a connected to the image processing apparatus 2 through the intranet L will be representatively described. In addition, as an data for use in updating acquisition example, in case of instructing by an electronic mail, the example in which the data for use in updating are acquired from the server 3 will be described and, on the other hand, in case of instructing by the browser, the other example in which the

data for use in updating are acquired from the maintenance terminal 1a will be described.

[0101]

Fig. 8 is a flowchart showing the data updating instruction processing. As shown in Fig. 8, when the maintenance person inputs the instruction for accessing the image processing apparatus 2 through the input unit 12, the CPU 11 is allowed to distinguish a state whether the access is executed by making use of an electronic mail or a browser (step S21). In case that the maintenance person selects to use the electronic mail (the electronic mail at step S21), an electronic mail software program is activated by the maintenance terminal 1a. Here, it should be noted that this instructing electronic mail includes a command (instruction) having an executable form for the image processing apparatus 2, and upon receiving this electronic mail, the image processing apparatus 2 reads out and executes a predetermined program in accordance with the command included in the instructing electronic mail, and then executes the individual processes.

[0102]

A figure (a) of Fig. 9 is a diagram showing an example of an instructing electronic mail prepared by the maintenance person. As is shown in Fig. 9, the user's ID and the password of the maintenance person who manipulates the maintenance terminal 1a are entered in a dialogue box of "Subject", and the electronic mail address for the image processing apparatus 2 at the destination is entered in a dialogue box of "To". Furthermore, in the text of the electronic mail, Get Prog1,name = "CopierProg1.bin" is entered as a command, executable by the image processing apparatus 2, with "Prog1" being used to represent the type of application data to be updated, and instructing the acquisition of data for use in updating having the file name "CopierProg1.bin".

[0103]

Referring again to Fig. 8, when the instruction for transmitting this prepared electronic mail is inputted, the instructing electronic mail is transmitted through the computer network to the image processing apparatus 2 (step S23). Subsequently, when a rewrite start notification electronic mail for indicating a state that the updating of data has been started has been received (step S24), the CPU 11 stands by for distinguish a state whether a rewrite completion notification for indicating the completion of the updating of data has been received or not (step S25). As a result, in case that the rewrite completion notification has been received (YES at step S25), the CPU 11 is allowed to distinguish the completion of the updating of data with the result that the data updating instruction processing is

terminated. In addition, in case that an error notification has been received (step 26) with the result that the rewrite completion notification has not been received (NO at step 25) at a predetermined period of time, the CPU 11 can display an error on the display unit under such a distinction as failing the update of data, and the data updating instruction processing is terminated.

[0104]

A figure (b) of Fig. 9 is a diagram showing an example of a rewrite completion notification transmitted from the image processing apparatus 2. As is shown in Fig. 9, the electronic mail address of the maintenance terminal 1a as a destination is described in a dialogue box, "To". In a dialogue box, "Subject", "Reply Message From 7165" as a message is described. The message indicates a reply message received from the image processing apparatus 2 having the model name "7165". The electronic mail address for the image processing apparatus 2 is described in a dialogue box, "From". In the text of the electronic mail, a message, "ISW completed" is described, which indicates the fact that the updating of data has been completed.

[0105]

Reference is made again to Fig. 8, in case that the instruction method by making use of the browser is inputted by the user (Browser at step 21), the CPU 11 can activate the browser and transmit a rewrite instruction request signal for updating data to the image processing apparatus 2 through ftp or http (step S27). Subsequently, when a rewrite set-up screen for inputting a rewrite set-up condition is received from the image processing apparatus 2 (step S28), the CPU 11 can allow the display unit to display the rewrite set-up screen. By this, the maintenance person selects a kind of data to be updated and a file to be transferred to the image processing apparatus 2 as the rewrite set-up conditions from the rewrite set-up screen, and inputs these (step S29).

[0106]

Here, with reference to Fig. 10, examples of rewrite set-up display screens displayed on the display unit 13 are described. As shown in a figure (a) of Fig. 10, a rewrite set-up display screen 134 is displayed in case that data to be updated is a firmware. In this screen, a kind of the firmware and a file to be transferred to the image processing apparatus are selected and inputted. In case of selecting the firmware, a predetermined firmware can be selected by checking off one check box out of check boxes corresponding to "control", "image processing", "operation panel", and "computer network".

On the other hand, in case of selecting the file, a screen 136 indicating a file storage area can be displayed by instructing a key of "file selection".

[0107]

5 A figure (b) of Fig. 10 is a view showing an example of a rewriting set-up display screen, in which the screen 136 indicating the file storage area is doubly displayed over the
10 rewrite set-up display screen 135 with the result that the key of the "file selection" is designated. In the figure (b) of Fig. 10, the file storage area indicates a fact that which directory stores a desired file out of directories stored in the storage unit 16 of the maintenance terminal 1a. In the
15 rewriting set-up display screen 136, the user can select the directory in which the file for executing the rewrite is stored, and input a selected file "rom1.bin" by instructing an "enter" key after adjusting a cursor on the file "rom1.bin" stored in the selected directory. In addition, by
instructing further a "rewrite key", the designated file can be acquired from the storage unit 16 and transferred to the image processing apparatus 2.

[0108]

20 With reference again to Fig. 8, when the rewrite set-up condition and transmission instruction are inputted, the CPU 11 can acquire the designated file from the directory in which the file is stored, and transmit the file to the image processing apparatus 2 (step S30). Subsequently, the
25 operation of CPU 11 moves to step S25 so as to distinguish a state whether a rewrite completion notification is received or not (step S25). When the rewrite completion notification is received from the image processing apparatus 2 (YES at step S25), the CPU 11 can distinguish the fact that the update of data is completed, and end the data updating
30 instruction processing. It should be here noted that, in case of executing transmission or reception of data between the browser and the image processing apparatus 2, the rewrite completion notification to be received is displayed on the browser in step S25. In addition, in case that an error
35 notification has been received (step 26) with the result that the rewrite completion notification has not been received (NO at step 25) at a predetermined period of time, the CPU 11 can display an error on the display unit under such a distinction as failing the update of data, and the data updating
40 instruction processing is terminated.

[0109]

45 Next, a data update processing executed by the image processing apparatus 2 will now be described. Fig. 11 is a flowchart showing an update processing of data executed by the CPU 21. As shown in Fig. 11, in case of executing an
access from the maintenance terminal 1a through the transmission section 24, the CPU 21 can distinguish a state whether an instructing electronic mail has been received and whether a rewrite instruction request has been received or
50 not (step S31). In case that the instructing electronic mail

has been received (mail at step 31), the CPU 21 can execute an identification of the maintenance person on the basis of a user's ID and a password included in the instructing electronic mail, and distinguish a state whether the

5 identification is successful or not (step S32).

[0110]

In case that the identification has failed (NO at step S32), the CPU 21 can execute an error processing and transmit an error notification electronic mail to the maintenance terminal 1a. On the other hand, in case that the

10 identification has been successful (YES at step S32), the CPU 21 can distinguish a state whether the image processing apparatus 2 is now carrying out another processing or not (step S33). In case that the image processing apparatus 2 is

15 now carrying out another processing (YES at step S33), a program control waits until the current processing has been terminated, or an error process is carried out to transmit an error notification electronic mail to the maintenance terminal 1a, that is, the transmission source of the rewrite

20 instructing electronic mail. In case that the image processing apparatus 2 is not currently carried out any process (NO at step S33), a notification electronic mail indicating that the rewriting has been started is prepared and transmitted to the maintenance terminal 1a (step S34).

25 [0111]

Then, the CPU 21 can acquire a command included in the received instructing electronic mail is analyzed, and analyze the command (step S35), so that data acquisition conditions (for example, a kind of data for use in updating to be

30 acquired, a file name, a program name, etc.) are extracted from the acquired command (step S36). The CPU 21 can distinguish which method, ftp, http or an electronic mail, is to be employed to acquire data for use in updating, in response to the data acquisition method previously set up in

35 the EEPROM 26 (step S37). In case that data are acquired by ftp, the CPU 21 can control the communication unit 24 so as to execute an access to the server 3 based on the set-up condition for ftp stored in the EEPROM 26. Thereafter, the CPU 21 can acquire designated data from the DB34 of the

40 server 3 (step S371).

[0112]

In case that data are acquired by http, the CPU 21 can control the communication unit 24 so as to execute an access to the server 3 based on the set-up condition for http stored

45 in the EEPROM 26, and transmit identification information of the image processing apparatus 2 and data acquisition conditions so as to acquire designated data from the DB 34 of the server 3 (step S372). Further, In case that data are

50 acquired by an electronic mail, the CPU 21 can prepare an electronic mail including identification information of the

image processing apparatus 2 and data acquisition conditions. Thereafter, the CPU 21 can transmit the prepared electronic mail to a destination having an electronic mail address of the server 3 set up by a set-up condition for the electronic mail, which has been stored in the EEPROM 26, so that designated data can be acquired from the DB 34 of the server 3 through the electronic mail (step S373).

[0113]

Here, such a processing as acquiring the designated data by making use of the sever 3 and transmitting the data to the image processing apparatus 2 will now be described hereinafter. When a CPU 31 mounted in the server 3 acquires identification information of the image processing apparatus 2 and data acquisition conditions through ftp, http or an electronic mail, the CPU 31 can acquire a serial number of the image processing apparatus 2, a product name thereof, a type thereof, a version type thereof, etc., which are included in the identification information of the image processing apparatus. Subsequently, the CPU 31 can select a corresponding directory out of directories stored in the DB 34 on the basis of the serial number, product name, model type, a version of the model type, etc., and execute an access to the directory. Thereafter, from the accessed directory, the CPU 31 can acquire data corresponding to a kind of data, a file name, a program name, etc., which are included in the data acquisition conditions.

[0114]

In addition, in case that only the identification information has been transmitted from the image processing apparatus, the CPU 31 can select a corresponding directory on the basis of the serial number, product name, model type, a version of the model type, etc., and execute an access to the directory. As a result, the CPU 31 can acquire data of the newest version set up by a default out of data stored in the accessed directory. Thereafter, the CPU 31 can transmit the acquired data to the image processing apparatus 2 through the communication unit 34 by making use of ftp, http or an electronic mail.

[0115]

When data are acquired by making use of any one of these acquisition methods, the CPU 21 can data for use in updating stored in the EEPROM 26 or the storage unit 18 with newly acquired data (step S38). Then, the CPU 21 can distinguish a state whether the updating of data has been completed (step S39). When the update of data has been completed (YES at step S39), prepare a rewriting completion notification, and transmit the notification to the maintenance terminal 1 (step S40). Then, the CPU 21 can execute the reactivation in order to validate the update of data, and the data update processing is thereafter terminated. In addition, in case

that the update of data has not been completed (NO at step S39), the CPU 21 can prepare an error notification and transmit the error notification to the maintenance terminal 1a (step S41). Then, the data update processing is terminated.

[0116]

On the other hand, returning to step S31, the case that the image processing apparatus 2 is allowed to access from the maintenance terminal 1a through a browser will now be described. Here, in case that transmission or reception of data is carried out through the browser, and when the image processing apparatus serves as a computer network server, the image processing apparatus 2 can be allowed to connect directly with the maintenance terminal 1a. Therefore, the CPU 21 can execute to control a communication between the maintenance terminal 1a and the image processing apparatus on the basis of a special protocol (for example, ftp or http).

[0117]

When the CPU 21 has received a rewrite instructing request from the maintenance terminal 1a through a browser (browser at step S31), the CPU 21 can acquire a user's ID and a password, which are included in the rewrite instructing request, and execute identification for the maintenance person (step S42). In case that the identification has been successful (YES at step S42), the CPU 21 can distinguish a state whether the image processing apparatus 2 is now carrying out another processing or not (step S43). When the image processing apparatus 2 is now carrying out another processing (YES at step S43), the CPU 21 can wait until the current processing has been terminated, or an error process is carried out to transmit an error notification to the maintenance terminal 1a.

[0018]

On the other hand, when the image processing apparatus is not carrying out another processing (NO at step S43), the CPU 21 can control the communication unit 34 and transmit the rewrite set-up screen data to the maintenance terminal 1a (step S44). Here, the CPU 21 can control a transference of data by making use of a protocol, that is, ftp or http, etc., serving as the transference through CGI (Common Gateway Interface). Successively, when data of the designated file as data used for the updating are transferred, the CPU 21 can receive the data (step S45). It should be here noted that it is possible to transfer the data through a protocol other than http by making use of Java applet.

[0119]

Subsequently, the CPU can data for use in updating stored in the EEPROM 26 or the storage unit 18 with newly acquired data (step S38). Then, the CPU 21 can distinguish a state whether the updating of data has been completed (step S39).

When the update of data has been completed (YES at step S39), prepare a rewriting completion notification, and transmit the notification to the maintenance terminal 1 (step S40). Then, the CPU 21 can execute the reactivation in order to validate the update of data, and the data update processing is thereafter terminated. In addition, in case that the update of data has not been completed (NO at step S39), the CPU 21 can prepare an error notification and transmit the error notification to the maintenance terminal 1a (step S41). Then, the data update processing is terminated.

[0120]

As is described above, according to the present exemplified mode, at the time of updating data for the image processing apparatus 2, the maintenance terminal 1a or 1b can transmits an electronic mail, which includes a data updating instruction, to the image processing apparatus 2 through the intranet L or Internet N. On the other hand, the image processing apparatus 2, which has received the electronic mail, can acquire designated data from the DB 34 of the data updating instruction included in the electronic mail and a predetermined data acquisition method. By this, the image processing apparatus can data for use in updating stored in the EEPROM 26 or the storage unit 28 with the data acquired from the server 3.

[0121]

Therefore, in case of executing an upgrade of version of operation data such as firmware stored in the image processing apparatus 2, etc., and set-up and update of various data, it becomes possible to allow the maintenance person to acquire designated data from the DB 34 of the server 3 only an operation that a maintenance person responsible to the image forming apparatus 2 controls the maintenance terminal 1a or 1b so as to transmit an updating instruction for data through a computer network. By this, it makes easily possible to execute an update of data. In this manner, it is not necessary for the maintenance person to proceed to a locale place, where the image processing apparatus is installed, and it makes possible to allow the image processing apparatus to execute an upgrade of version of operation data such as firmware, and set-up and update of various data. In addition, it becomes possible to reduce an operational responsibility of the maintenance person and, on the other hand, to improve the operation efficiency. Therefore, it makes possible to reduce the cost with respect to the maintenance so as to use efficiently a system.

[0122]

Further, since the image processing apparatus 2 can acquire data for use in updating by executing an access to the server 3 on the basis of a predetermined data acquisition method, it is not necessary to transmit the data for use in

updating from the maintenance terminal 1a or 1b. Therefore, it makes possible to reduce a data capacity to be transmitted at the time of transmitting a data updating instruction. As a result, when the data updating instruction is transmitted, it becomes possible to save a time spent on communication without refusing reception of the data updating instruction due to an excess of a reception capacity.

[0123]

Further, when data for use in updating is transmitted from the maintenance terminal 1a through a computer network, it will be caused to restrict entrance into a local computer network if a program as a attach file, which is executable for a computer, is attached to data. However, it is not necessary to attach any attach file such as a program, etc. to the data updating instruction, because the data updating instruction can be acquired by the image processing apparatus 2. Therefore, there is no case that the access to the local computer network is refused by a fire wall provided at the entrance of the local computer network. In addition, since the image processing apparatus can acquire the data for use in updating by accessing to the server 3 from the inside of the local computer network, the data for use in updating can be received from the outside, while keeping a security level in the local computer network constant.

[0124]

Further, in case of transmitting the updating instruction from the maintenance terminal 1a or 1b to the image processing apparatus 2, since this transmission can be executed by making use of ftp, http or an electronic mail and moreover by a proper method in response to a state of the maintenance terminal 1a or 1b, there are a wider usability and a great convenience. For example, either one of ftp, http, and an electronic mail can be used in case that the maintenance terminal 1a or 1b is connected to the image processing apparatus 2 through the intranet L as a local computer network. However, in case that the terminal is connected to the image processing apparatus 2 through the computer network N, which is an outer computer network, it is preferable to transmit the updating instruction by making use of the electronic mail in view of security.

[0125]

Since all data required for updating the data for the image processing apparatus 2 are stored in the DB34 of the server 3, it makes possible to acquire data for use in updating by taking an access to the server 3 from any place. In addition, since the server 3 can manage data in the lump, it becomes possible to use efficiently a data processing system by effectively utilizing limited resources.

[0126]

Further, the server 3 can acquire corresponding data

stored in the DB 34 thereof on the basis of a serial number, product name, model type, version of the model type, type of data for use in updating, file name, program name, directory name in which the data concerned is stored, etc., which are
5 received from the image processing apparatus 2 as identification information thereof, the corresponding data can be positively acquired on the basis of various types of information and transmitted to the image processing apparatus 2.

10 [0127]

Further, since the image processing apparatus 2 can transmit an update start notification to the maintenance terminal 1a or 1b at the time of starting the update of data, and transmit an update completion notification or error
15 notification to the maintenance terminal 1a or 1b at the time of ending the update of data, it makes possible for the maintenance person to hold the working process of the data update processing executed by the image processing apparatus, and moreover, even if any trouble is caused, the maintenance
20 person can promptly deal with the trouble. By this, it becomes possible to improve a customer's satisfaction.

[0128]

Further, in case that the maintenance terminal 1a is directly connected to the image processing apparatus 2 having
25 a function as a computer network server, or in case that the maintenance terminal 1a is connected to the image processing apparatus 2 through the intranet L, the maintenance terminal 1a can directly transfer the data for use in updating to the image processing apparatus 2. In other words, when the
30 maintenance terminal 1a transmits the rewriting set-up screen data to the image processing apparatus 2 by making use of ftp or http, and receives the rewriting set-up screen data from the image processing apparatus 2, the maintenance terminal 1a can display the rewriting set-up screen through the browser.
35 As a result, the maintenance terminal 1a can select the data for use in updating in the rewriting set-up screen, and transfer the data for use in updating to the image processing apparatus 2. In addition, the image processing apparatus 2 having a function as a computer network server can receive
40 the data for use in updating through ftp or http by controlling the communication between the image processing apparatus and the maintenance terminal 1a, and update the data stored in the EEPROM 26 or the storage unit 28 with the data for use in updating, which are acquired from the
45 maintenance terminal 1a.

[0128]

Therefore, since the maintenance terminal 1a can be directly connected the image processing apparatus 2 through
50 the computer network constructed by the image processing apparatus, which can serve as the computer network server, it

is not necessary to provide another server. As a result, the image processing apparatus 2 maintenance terminal 1a can be directly connected to the maintenance terminal 1a in a simple manner. By this, it becomes possible to execute efficiently transmission or reception of the data for use in updating, and moreover improve security on the transference of the data for use in updating. In addition, it makes possible to reduce the cost, because it is not necessary to provide another server for constructing the computer network.

[0130]

Further, since the transmission or reception of the data carried out between the maintenance terminal 1a and the image processing apparatus 2 can be executed by making use of ftp or http, for example, the time required for transferring the data can be shortened so as to achieve an efficient operation as compared to the case of transferring the data by making use of a parallel cable or USB cable.

[0131]

Further, the maintenance terminal in which a browser function is equipped can input an updating instruction from the rewrite set-up screen displayed by the operation under the browser function, and transfer the data stored in the storage unit 16 to the image processing apparatus when the data for use in updating are designated. Therefore, the maintenance terminal 1a can execute the update of data by making use of a general-purpose notebook PC or a PDA incorporating the browser function. As a result, a plurality of special tools need not be prepared for the models of the individual image processing apparatuses, and the maintenance cost can be saved. In addition, various information can be entered by the browser function based on the information displayed on the display unit 13, and through a simple operation, the data transfer instruction can be issued or data to be transferred can be entered and designated. Thus, the satisfactory operability is obtained.

[0132]

Now, it should be noted that the present exemplified mode is merely an example for the image processing apparatus, the maintenance terminal, the server and the data processing system preferred to the present invention, and the configuration is not limited to this.

[0133]

For example, in this mode, the maintenance terminal 1a is connected through the intranet L, while the maintenance terminal 1b is connected through the computer network N. However, the maintenance terminals 1a and 1b may be connected through various other computer networks.

[0134]

Further, in view of the computer network security, it is preferable for the maintenance terminal 1a connected to the

image processing apparatus through the intranet L to transmit the updating instruction by making use of ftp, http or the electronic mail, while it is preferable for the maintenance terminal 1a connected to the image processing apparatus through the computer network N to transmit the updating instruction by making use of the electronic mail. However, it makes possible to transmit the updating instruction from another maintenance terminal 1b by making use of ftp or http.

[0135]

Still further, in the present exemplified mode, it is explained in the above description that, as an appropriate example, the data for use in updating is transferred from the maintenance terminal 1a directly connected with the image processing apparatus 2 having the sever function to the image processing apparatus by making use of ftp or http. However, it is of course to be not limited to this example. For example, it is preferable to have a construction such that a computer network constructed by another server unit is used instead of the intranet L, and that the maintenance terminal 1a is connected to the image processing apparatus 2 through the server unit, while the maintenance terminal 1a is also connected to the intranet L, or that the data for use in updating can be transferred from the maintenance terminal 1b which is connected to the image processing apparatus through the computer network N. In addition, it can be permitted to have a construction such that the maintenance terminal 1a is directly connected to the image processing apparatus 2 having the server function, and thereby the input of various information is executed through the input unit 22 of the image processing apparatus 2.

[0136]

Still further, in the above description, it is explained that the acquisition method for acquiring the data for use in updating from the server 3 is carried out by making use of ftp, http or the electronic mail. However, it is possible to execute the set-up of the acquisition method by inputting directly the set-up condition from the input unit 22 of the mage processing apparatus 2.

[0137]

It is of course that the detailed arrangements and operations of the individual components of the data processing system 100 in the first embodiment can be appropriately modified without departing from the subject of the invention.

[0138]

[EFFECTS OF THE INVENTION]

According to the invention set forth in claim 1, the image processing apparatus can allow itself to obtain the data for use in updating so as to acquire an instruction for executing the update of the data through the electronic mail,

and can execute the update of the data stored in the storage unit by acquiring the data for use in updating in accordance with the instruction. Thus, it becomes possible to execute the update of the data for the image processing apparatus by, for example, transmitting the electronic mail through a computer network from the remote place. In addition, by making use of the electronic mail, for example, even if such an image processing apparatus as connecting with a computer network constructed within a local area is used, it can be possible to execute the update of the data while keeping a computer network's security level constant. Accordingly, in order to execute the update of the data, it is unnecessary for the person, who carries out a maintenance work for the image processing apparatus, to proceed to a locale place, where the image processing apparatus is installed. As a result, the working efficiency is remarkably improved.

[0139]

According to the invention set forth in claim 2, the image processing apparatus can allow itself to obtain the data for use in updating so as to acquire an instruction for executing the update of the data by making use of ftp or http, and can execute the update of the data stored in the storage unit by acquiring the data for use in updating in accordance with the instruction. Thus, it makes possible to allow the image processing apparatus to execute the update of the data stored in the storage unit from a remote place by, for example, utilizing a technology used commonly such as the Internet.

[0140]

According to the invention set forth in claim 3, the image processing apparatus can previously store information concerning the method of acquiring the data for use in updating. When the instruction to execute the update of the data has been acquired, the image processing apparatus can acquire the data for use in updating from the server, which is connected with the computer network, in accordance with the acquisition method. By this, on the occasion of instructing the update of the data, it is not necessary to transmit the data for use in updating to the image processing apparatus. For example, even if such an image processing apparatus as connected with a computer network constructed within a local area is used, it becomes possible to acquire positively the data for use in updating.

[0141]

According to the invention set forth in claim 4, it becomes possible to set up the acquisition method of acquiring the data for use in updating from the remote place by, for example, transmitting the information concerning the acquisition method of acquiring the data for use in updating and storing the data for use in updating in the storage unit.

By this, in order to set up the acquisition method for the data for use in updating, it is unnecessary for the person, who carries out a maintenance work for the image processing apparatus, to proceed to a locale place, where the image processing apparatus is installed. As a result, the working efficiency is improved. In addition, in case that there is a change in a set-up of the server and that any trouble is generated, it makes possible to deal with those matters by changing promptly in the set-up of the acquisition method. Accordingly, it can be possible to improve a feeling of satisfaction for the customer.

[0142]

According to the invention set forth in claim 5, since the image processing apparatus can acquire the data for use in updating by an acquisition method in response to the existing state, which is appropriately selected from a plurality of acquisition methods, it becomes possible to acquire positively the data for use in updating.

[0143]

According to the invention set forth in claim 6, the image processing apparatus can receive the information concerning the acquisition method of acquiring the data for use in updating by making use of either preferable one of ftp, http and an electronic mail.

[0144]

According to the invention set forth in claim 7, for example, when the person who is responsible for carrying out the maintenance, proceeds to the actual locale where the image processing apparatus is installed, it becomes possible to set up directly the acquisition method through the input unit of the image processing apparatus. By this, it makes possible to set up positively the acquisition method of the data for use in updating.

[0145]

According to the invention set forth in claim 8, it becomes possible to update automatically the firmware, etc., which requires periodically to upgrade its version in response to the progress of the technology. In addition, it makes possible to change easily in set-up data, etc., which are changed in response to the user's requirement. By this, for example, in case of exchanging the image processing apparatus for the other one, it can be possible to make easily a spec. style similar to that of the previous image processing apparatus. The image processing apparatus has a good convenience of use.

[0146]

According to the invention set forth in claim 9, through the electronic mail, it becomes possible to notify the subscriber, who has transmitted the instruction for updating the data, of a state that the update of the data has been

started. By this, for example, even when the instruction for updating the data has been outputted at the remote place by the person who is responsible for the maintenance work, it makes possible for the maintenance person to hold the working process, and moreover, even if any trouble is caused, the maintenance person can promptly deal with the trouble.

[0147]

According to the invention set forth in claim 10, through the electronic mail, it becomes possible to notify the subscriber, who has transmitted the instruction for updating the data, about the result of the update of the data. By this, for example, even when the instruction for updating the data has been outputted at the remote place by the person who is responsible for the maintenance work, it makes possible for the person to hold the working process with the result that, if any trouble is caused, the person can promptly deal with the trouble.

[0148]

According to the invention set forth in claim 11, it becomes possible to notify the subscriber, who has transmitted the instruction for updating the data, about the result of the update of the data. By this, for example, even when the instruction for updating the data has been outputted at the remote place by the person who is responsible for the maintenance work, it makes possible for the person to hold positively presence or nothing of the completion of the update of the data with the result that, if any trouble is caused, the person can promptly deal with the trouble.

[0149]

According to the invention set forth in claim 12, the image processing apparatus can acquire from the server the data for use in updating corresponding to the image processing apparatus on the basis of the identification information for the image processing apparatus stored in the storage unit. By this, on the occasion of transmitting the update instruction of data, it is not necessary to specify in detail the data for use in updating with the result that trouble at the time of instructing the update of data can be saved. In addition, since the identification information for the image processing apparatus previously stored in the storage unit is utilized, it becomes possible to acquire precisely necessary data without generating artificial errors such as an input error in case of specifying the data for use in updating.

[0150]

According to the invention set forth in claim 13, since the image processing apparatus can acquire the data for use in updating from the server on the basis of the identification information for the image processing apparatus stored in the storage unit and the information concerning the

data for use in updating included in the update instructing information, it becomes possible to specify precisely necessary data and acquire the same. In addition, the person, who is responsible for the maintenance work and instructs the update of data, can allow the image forming apparatus to acquire desired data by causing the update instructing information to include the information concerning the data for use in updating.

[0151]

According to the invention set forth in claim 14, it becomes possible to allow the image forming apparatus to acquire the data for use in updating on the basis of various information peculiar to the image processing apparatus and their combined information.

[0152]

According to the invention set forth in claim 15, it makes possible to specify the data for use in updating on the basis of various information, and allow the image processing apparatus to acquire the data for use in updating by specifying positively the desired data for use in updating.

[0153]

According to the invention set forth in claim 16, the data for use in updating, which are necessary to execute the update of data for the image processing apparatus, are previously stored in the server connected thereto through a computer network, it can be possible to allow the image processing apparatus to acquire the data for use in updating by taking access to the server only in case of required. In addition, the server can manage the data for use in updating in the lump, which are necessary to execute the update of data for the image processing apparatus, by storing those in a database, it can be possible to provide the image processing apparatus with necessary data while utilizing effectively limited resources, and thereby intending an efficient application of the data processing system.

[0154]

According to the invention set forth in claim 17, on the basis of the identification information for image processing and the information concerning the update date, the server can refer to data in the database and acquire efficiently and positively desired data, and further transmit the desired data to the image processing apparatus.

[0155]

According to the invention set forth in claim 18, in case of executing the update of data for the image processing apparatus, it makes possible to transfer the data for use in updating from the maintenance terminal to the image processing apparatus by making use of a special protocol. By this, for example, the time required for transferring data can be shortened so as to achieve an efficient operation as

compared to the case of transferring data by making use of a parallel cable or USB cable.

[0156]

According to the invention set forth in claim 19, it becomes possible to transfer data by making use of an appropriate protocol carrying the data transfer, thereby enabling the system to transfer the data efficiently.

[0157]

According to the invention set forth in claim 20, since it becomes possible to connect the maintenance terminal with the data processing system through the computer network constructed by the image processing apparatus having a server function, the maintenance terminal and the image processing apparatus can be connected with each other in a manner of peer to peer. By this, the data transfer between the maintenance terminal and the image processing apparatus can be efficiently carried out, and further it can be possible to improve security in case of the data transfer. In addition, it makes possible to decrease the cost, because it is not necessary to provide the system with other servers in order to construct the computer network.

[0158]

According to the invention set forth in claim 21, it becomes possible to allow the maintenance terminal to execute the input of the update instructing information on the basis of the display information displayed on the display unit through the browser function. By this, it can be possible to instruct the data transfer by a simple operation, with the result of a good operation ability.

[0159]

According to the invention set forth in claim 22, in case of allowing the image processing apparatus to execute the update of data, the maintenance terminal can execute the update of data by making use of such as a common personal computer, which is provided therein with the browser function without being necessary to provide special tools. In addition, for example, the time required for transferring data can be shortened by executing the transmission of data through the ftp or http as compared to the case of transferring data by making use of a parallel cable or USB cable.

[BRIEF DESCRIPTION OF THE DRAWINGS]

[FIG. 1]

This figure is a conceptual diagram showing the system constitution of a data processing system 100 concerning the exemplified mode.

[FIG. 2]

This figure is a block diagram showing the constitution in a functional state of a maintenance terminal 1a shown in Fig. 1.

[FIG. 3]

This figure is a block diagram showing the constitution in a functional state of an image processing apparatus.

[FIG. 4]

This figure is a block diagram showing the constitution in a functional state of a server.

[FIG. 5]

This figure is a diagram showing an example of data structure for a DB shown in Fig. 4.

[FIG. 6]

This figure is a flowchart for explaining acquisition method set-up processing performed by the CPU 11 shown in Fig. 2.

[FIG. 7]

Figure (a) is a view showing an example of set-up input screen used for executing a set-up of ftp.

Figure (b) is a view showing an example of set-up input screen used for executing a set-up of http.

Figure (c) is a view showing an example of set-up input screen used for executing an electronic mail.

[FIG. 8]

This figure is a flowchart for explaining the data updating instruction processing executed by the CPU 11 shown in Fig. 2.

[FIG. 9]

Figure (a) is a view showing an example of an instructing electronic mail prepared by the maintenance terminal 1a.

Figure (b) is a view showing an example of a rewriting completion notification prepared by the image processing apparatus.

[FIG. 10]

Figure (a) is a view showing an example of a rewriting set-up display screen displayed on a display unit 13 of the maintenance terminal 1a.

Figure (b) is a view showing an example of a rewriting set-up display screen displayed on a display unit 13 of the maintenance terminal 1a.

[FIG. 11]

This figure is a flowchart showing an update processing of data executed by the CPU 21 shown in Fig. 3.

[DESCRIPTION OF REFERENCE NUMERALS]

1a, 1b Maintenance terminal

11 CPU

12 Input unit

13 Display unit

14 Communication unit

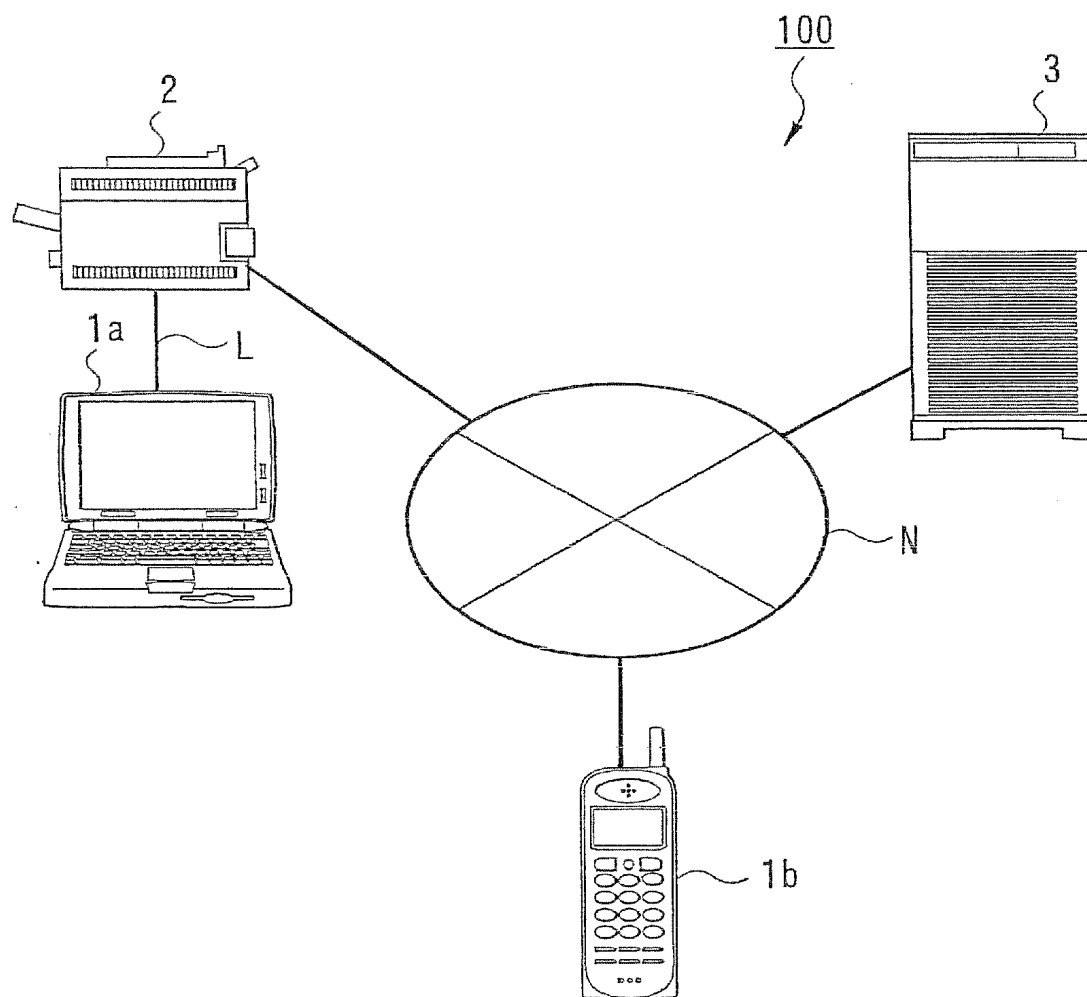
15 RAM

16 Storage unit

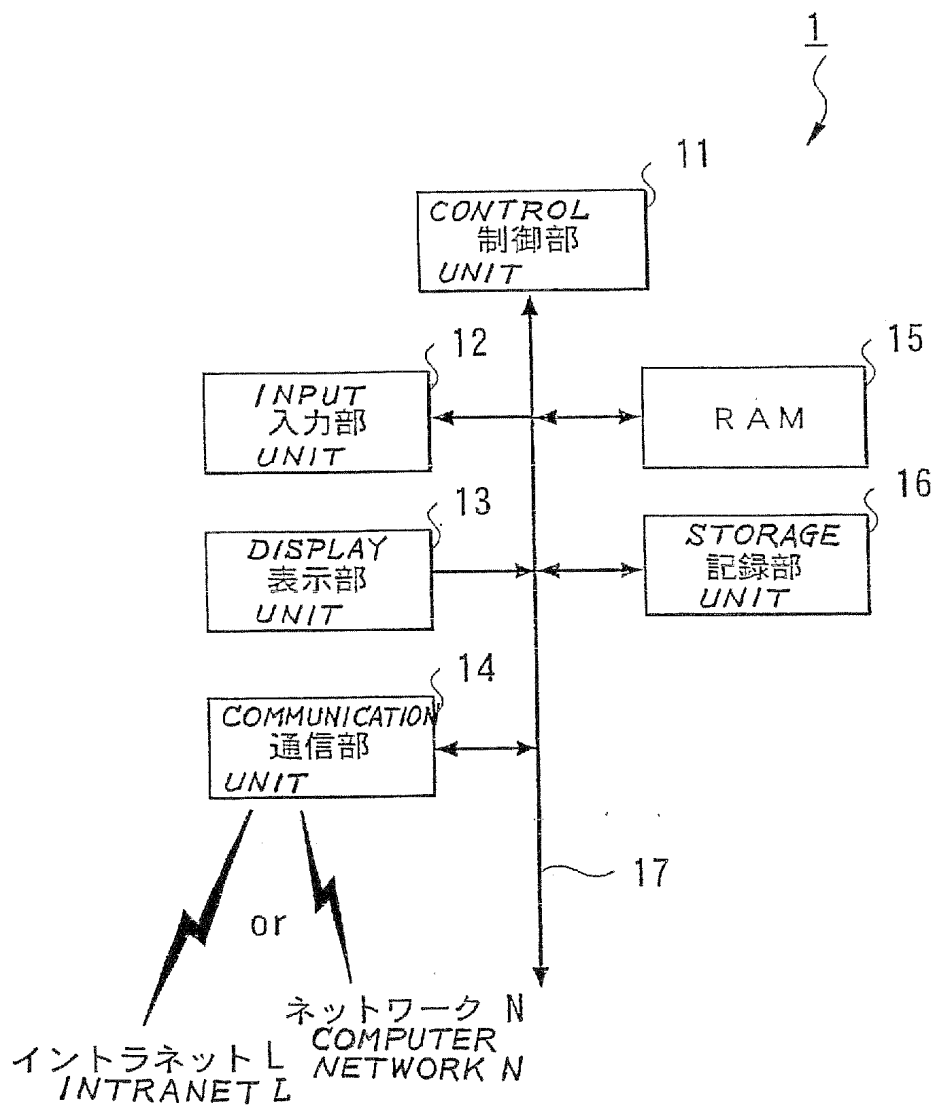
17 Bus

	2	Image processing apparatus
	21	CPU
	22	Input unit
	23	Display unit
5	24	Communication unit
	25	RAM
	26	EEPROM
	27	Printing unit
	28	Storage unit
10	29	Bus
	3	Server
	31	CPU
	32	RAM
	33	Communication unit
15	34	DB

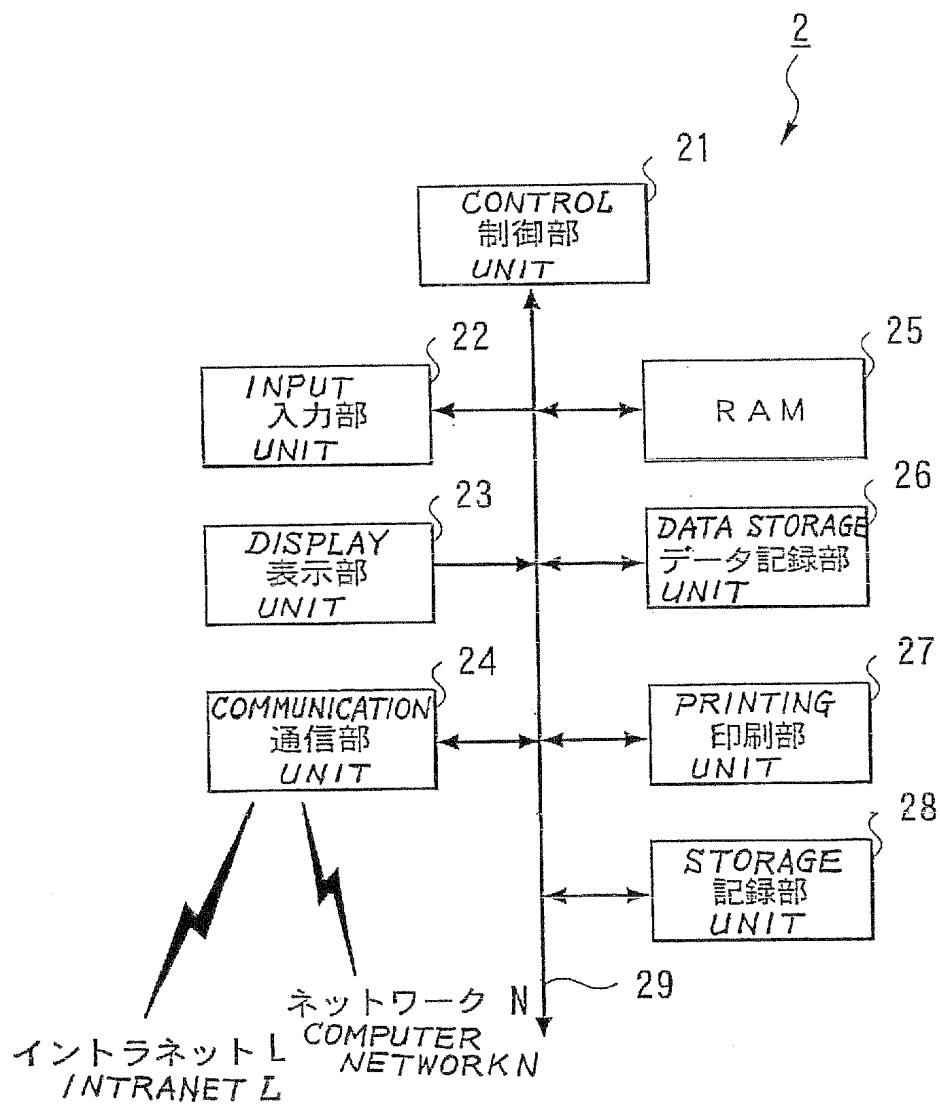
[NAME OF DOCUMENT] DRAWINGS
[FIG. 1]



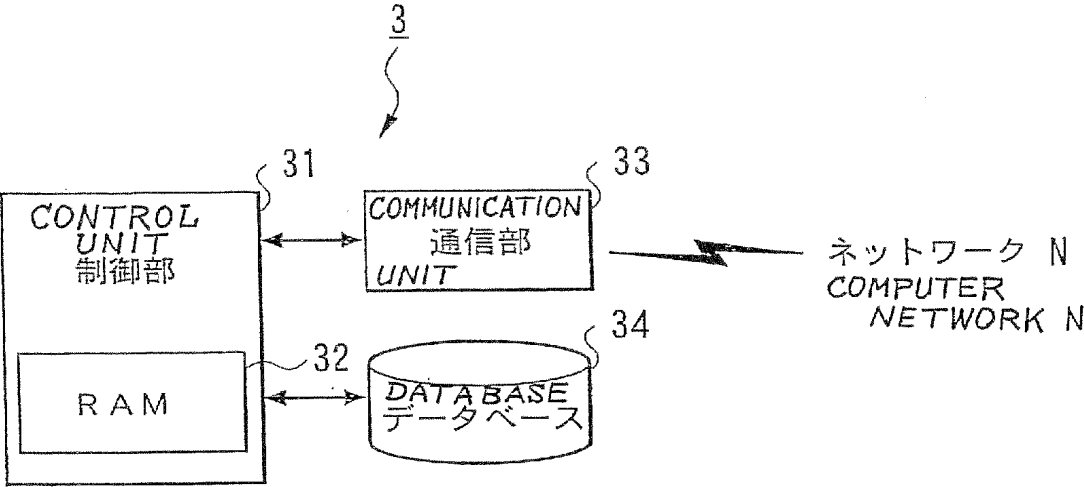
[FIG. 2]



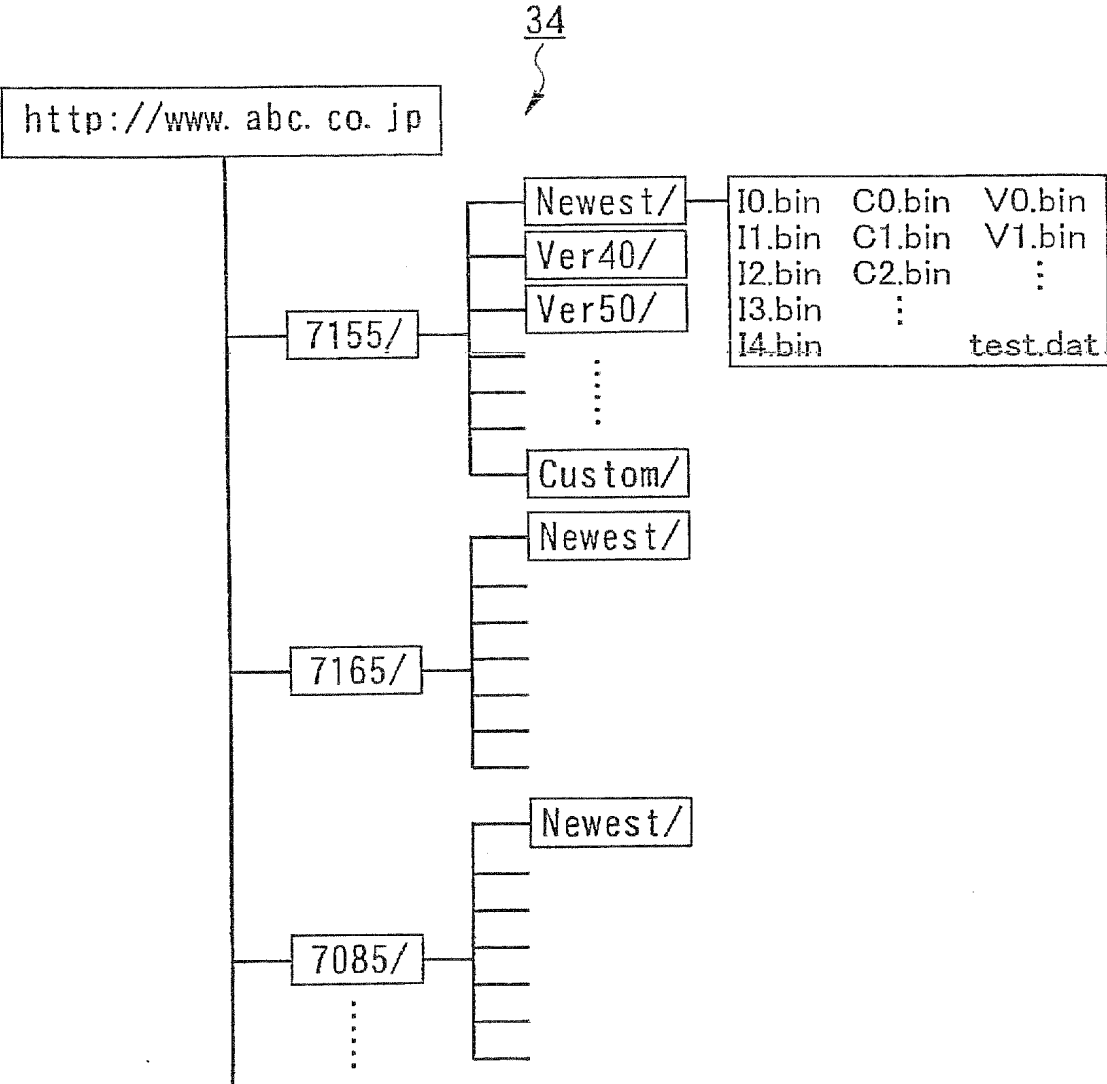
[FIG. 3]



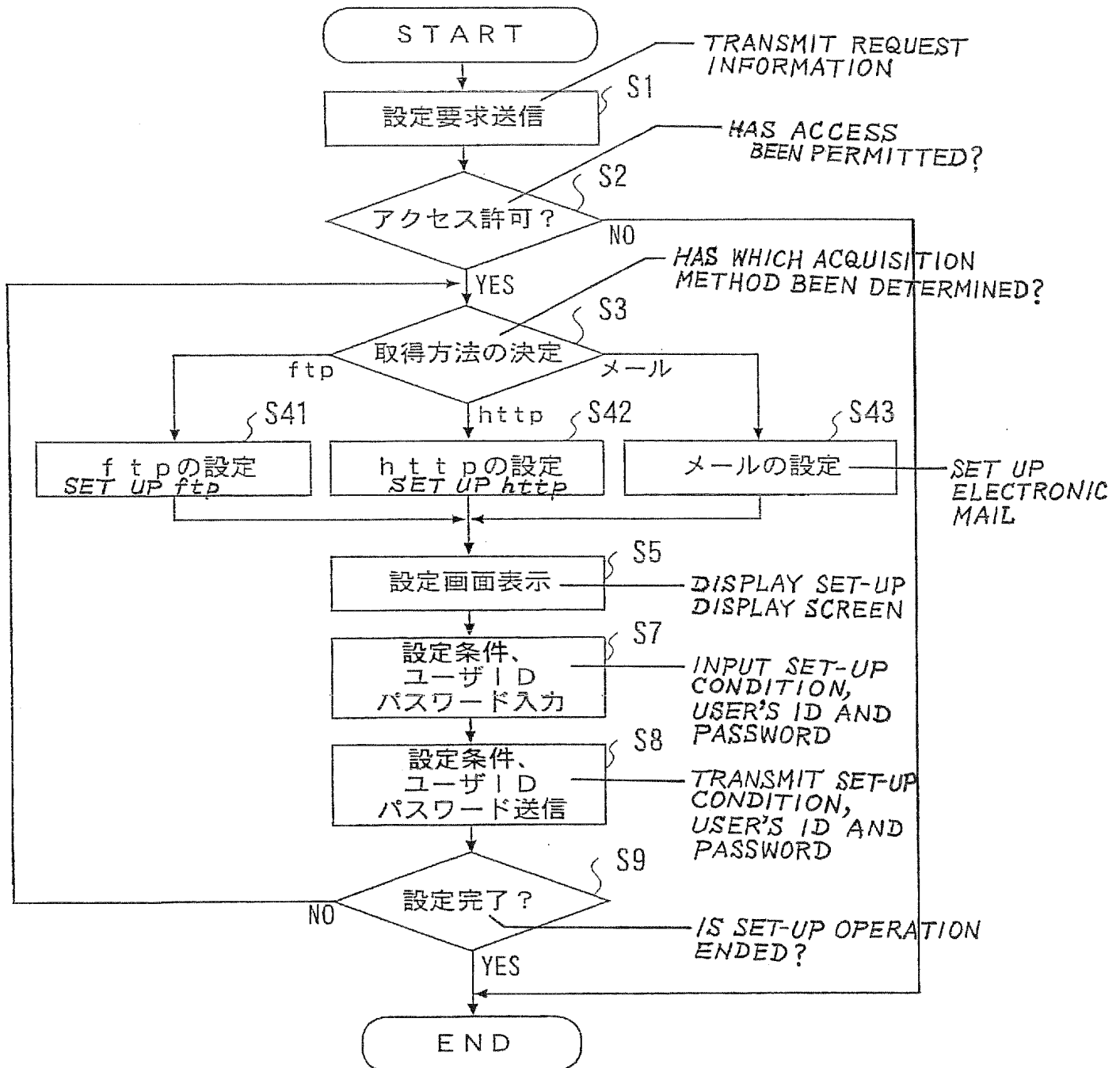
[FIG. 4]



[FIG. 5]



[FIG. 6]



[FIG. 7]

(a)

1. PROGRAM SERVER SETUP (FTP) ~ 131

☒ USE ftp

PROGRAM SERVER ADDRESS

ftp: //abc. co. jp/com/version3/

USER ID PASSWORD

2. FIREWALL SETUP

☒ USE HTTP proxy ☐ USE FTP proxy

FIREWALL IP ADDRESS . . .

PORT

(b)

2. PROGRAM SERVER SETUP (HTTP) ~ 132

☒ USE http

PROGRAM SERVER ADDRESS

http: //abc. co. jp/com/version3/ a1

USER ID PASSWORD

2. FIREWALL SETUP

☒ USE HTTP proxy ☐ USE FTP proxy

FIREWALL IP ADDRESS . . .

PORT

(c)

3. PROGRAM SERVER SETUP (EMAIL) ~ 133

☒ USE POP3 ☐ USE IMAP

RECEIVED EMAIL SERVER ADDRESS

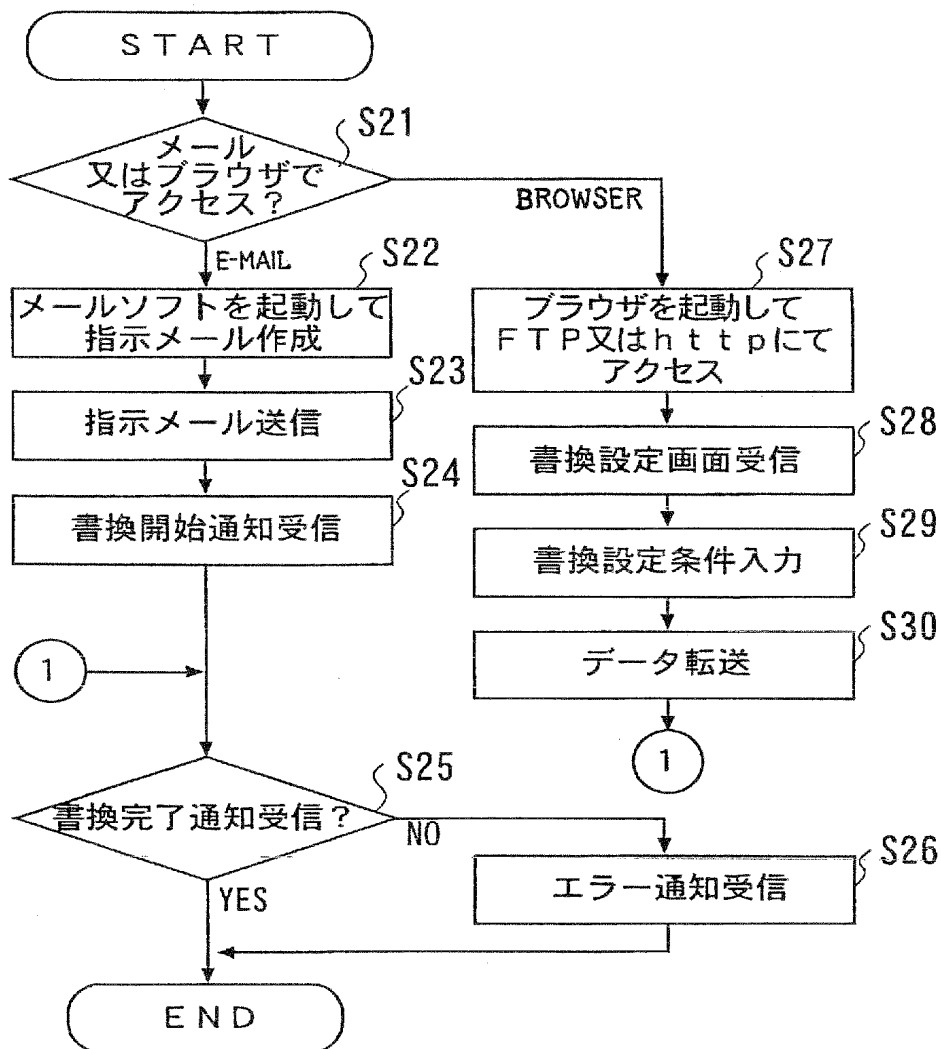
mailserver. office. co. jp

USER ID PASSWORD

EMAIL ADDRESS

abc@mailserver. office. co. jp

[FIG. 8]



S21: WHICH DOES ACCESS CARRY OUT THROUGH BROWSER OR E-MAIL?

S22: PREPARE INSTRUCTION E-MAIL BY ACTIVATING E-MAIL SOFTWARE

S23: TRANSMIT INSTRUCTION E-MAIL

S24: RECEIVE REWRITE START NOTIFICATION

S25: DOES REWRITE COMPLETION NOTIFICATION RECEIVE?

S26: RECEIVE ERROR NOTIFICATION

S27: ACCESS THROUGH FTP OR http BY ACTIVATING BROWSER

S28: RECEIVE REWRITE SET-UP SCREEN

S29: INPUT REWRITE SET-UP CONDITION

S30: TRANSFER DATA

[FIG. 9]

(a)

Subject	abc isw
To	abc@abc.mailserver.office.co.jp
Cc	
Get Prog1, name="CopierProg1. bin"	

(b)

Date: Tue, 17 Sep 2002 11:52:58 +0900 (JST)
To: xyz@xyz.co.jp
Subject: Reply Message From 7165[ISW]
From: abc@abc.mailserveroffice.co.jp (56AF90012)
ISW completed
->[ISW CopierProg1. bin]

[FIG. 9]

134

PLEASE SELECT KIND OF FIRMWARE TO EXECUTE REWRITE

☒ CONTROL ☐ IMAGE PROCESSING ☐ OPERATION PANEL
☐ COMPUTER NETWORK

PLEASE SELECT FILE TO EXECUTE REWRITE

135

PLEASE SELECT KIND OF FIRMWARE TO EXECUTE REWRITE

☒ CONTROL ☐ IMAGE PROCESSING ☐ OPERATION PANEL
☐ COMPUTER NETWORK

PLEASE SELECT FILE TO EXECUTE REWRITE

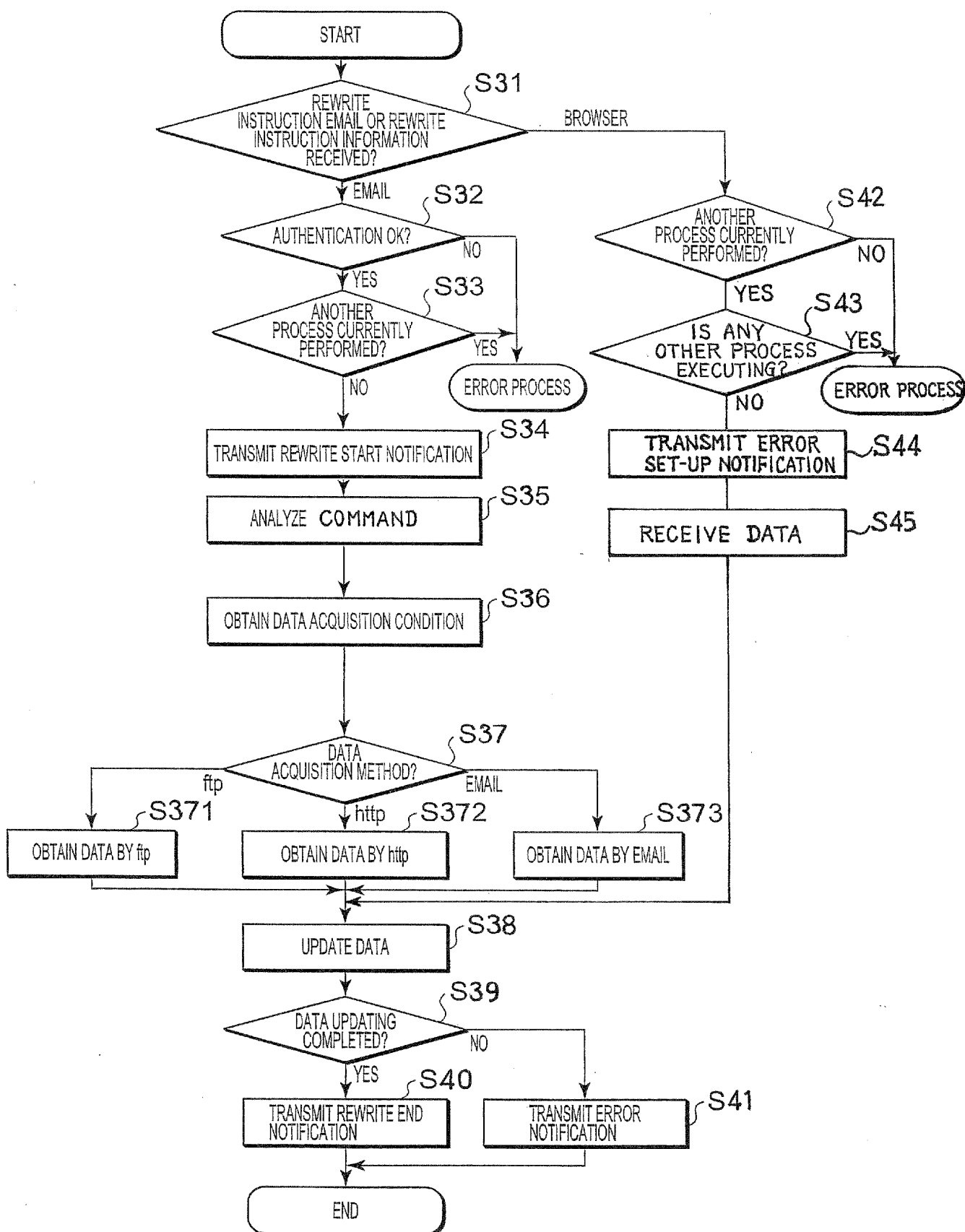
PLACE OF FILE

☒ rom1. bin
☒ rom2. bin

NAME OF FILE
KIND

136

[FIG. 11]



[NAME OF DOCUMENT] BRIEF

[ABSTRACT]

[PROBLEM] A problem of the present invention is to execute an update of data efficiently and easily without necessitating any exclusive tool and hardware in case of updating a firmware, various set up data, etc.

[SOLVING MEANS] In a data processing system 100, maintenance terminals 1a and 1b transmits an E-mail to an image processing apparatus 2 connected to the maintenances through the Intranet L or a network N. The image processing apparatus 2 receiving the E-mail acquires designated data from a data-base 34 of a server 3 on the basis of an update instruction for the data, which is included in the E-mail, and a predetermined data acquisition method. Successively, the image processing apparatus 2 updates data stored in an EEPROM 26 or a storage unit 28 into the data acquired from the server 3.

[DRAWINGS TO BE SELECTED] Fig. 1